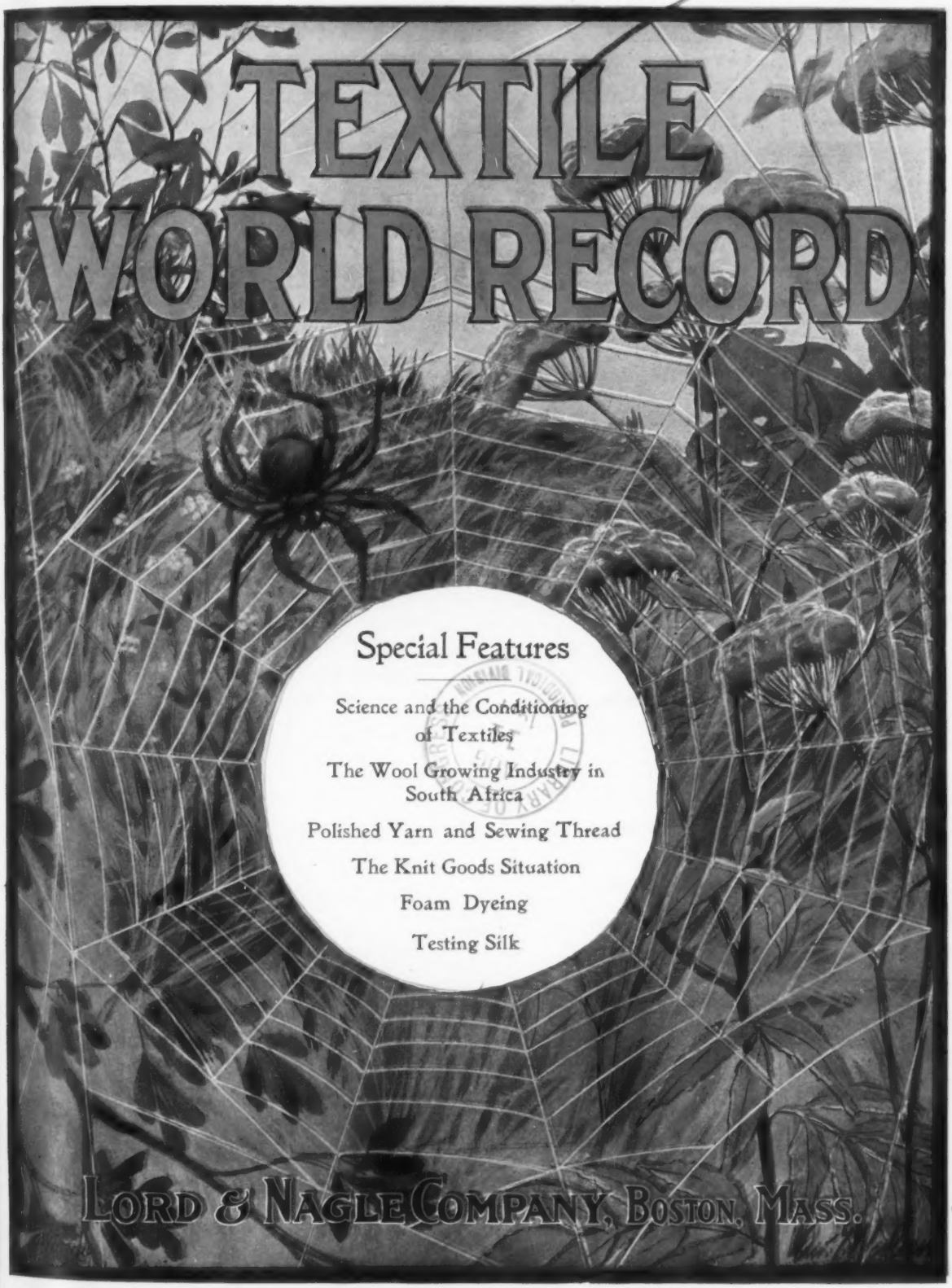
Number 5
Volume XLVII

AUGUST, 1914

$2.00 per year
$3.00 with Directory

TEXTILE WORLD RECORD



Special Features

Science and the Conditioning of Textiles

The Wool Growing Industry in South Africa

Polished Yarn and Sewing Thread

The Knit Goods Situation

Foam Dyeing

Testing Silk

LIBRARY OF CONGRESS

LORD & NAGLE COMPANY, BOSTON, MASS.

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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

BUILDERS OF

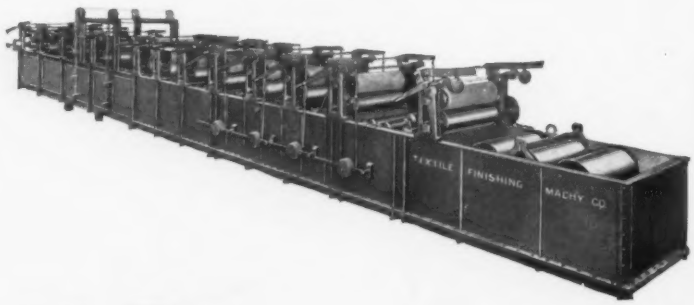
Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

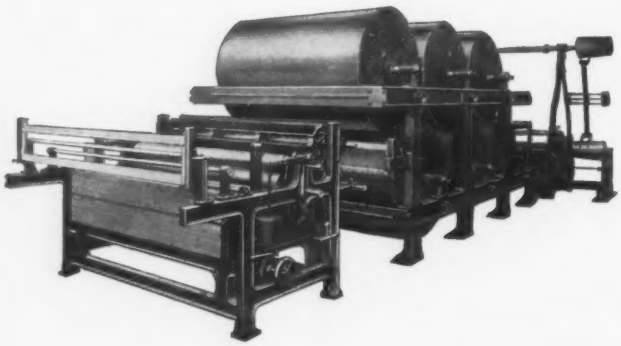
FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants

Warp Mercerizing Machine





Carpet Yarn Sizing, Drying and Beaming Machine

SOLE BUILDERS IN UNITED STATES OF
SPENCER'S IMPROVED SKEIN MERCERIZING MACHINE

Mercerizing Machinery for Cotton Goods and Warps

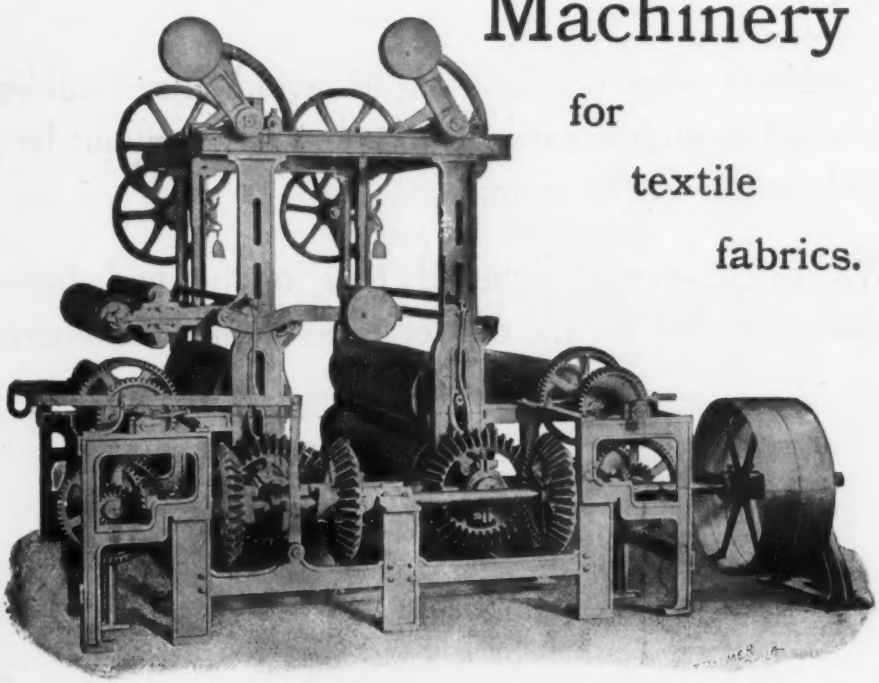
H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office,
Room 417, Industrial Trust Bldg.

Bleaching,
Dyeing,
Drying,
Finishing,
Machinery

for
textile
fabrics.



DOUBLE CRABBING MACHINE.

Northrop Loom Repairs

TRADE MARK REGISTERED

We again call attention to the importance of purchasing Northrop loom repairs of the makers of the looms. We have spent thousands of dollars in fitting up moulding machines to insure the most uniform castings possible. It is false economy to buy such repairs of job foundries or other outside sources of supply.

Customers who purchase of us avoid the troubles incident to misfits, hard castings and the resultant bad cloth in the weave room.

We carry several hundred tons of finished loom repairs in stock for the convenience of our customers.

DRAPER COMPANY

HOPEDALE, MASS.

DRAPER COMPANY

Northrop Loom Repairs

FIT

Northrop Looms

TRADE MARK REGISTERED

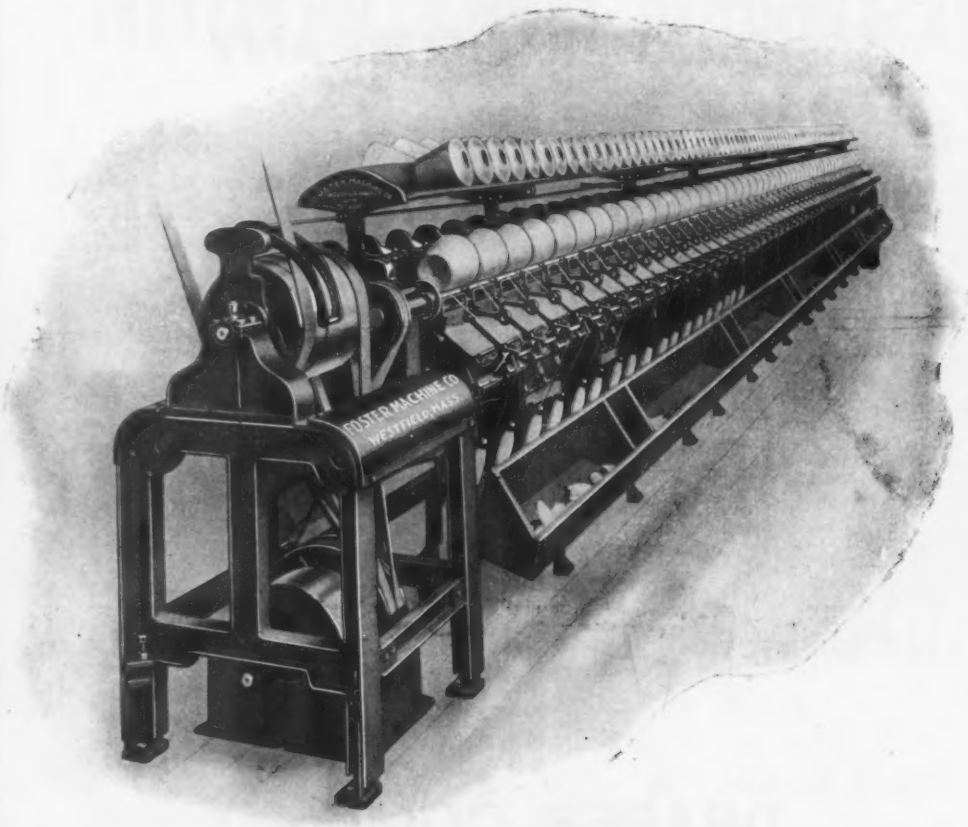
MADE BY

DRAPER COMPANY

Hopedale Mass.

J. D. CLOUDMAN Southern Agent
40 South Forsyth Street Atlanta Georgia

Foster Machine Co.



The Foster Model 12 differential attachment spaces the yarn on the cone in winding so as to secure in the Knitting process a light unwinding tension that does not change from start to finish of cone. ¶ This is *one* of the exclusive features that has made the Foster Finished cone acceptable to all Knitters.

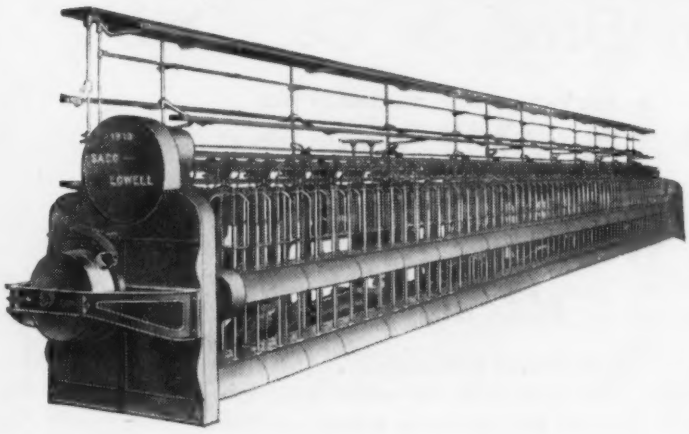
Office and Works

Westfield, - - Massachusetts

John Hill, So. Agent, Third National Bank Bldg., Atlanta, Ga.

Saco-Lowell Shops

TEXTILE MACHINERY



Shops—
Lowell, Mass.
Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

COMPLETE COTTON MILL EQUIPMENT
Including:
Pickers
Cards
Drawing
Evener Drawing
Roving
Spinning
Twisters
Slashers
Spoolers
Reels
Winders
Warpers
Looms

WASTE RECLAIMING MACHINERY

WORSTED MACHINERY
Including:
Revolving Creels,
Gill Boxes
Drawing Frames,
Reducing and Roving Frames,
Cap Ring and Flyer Spinning and Twisting Frames
Jack Spoolers

LEIGH & BUTLER

SUCCESSORS TO

EVAN ARTHUR LEIGH

232 Summer Street opposite the South Station), Boston, Mass.

SOLE AGENTS

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen & Worsted Machinery

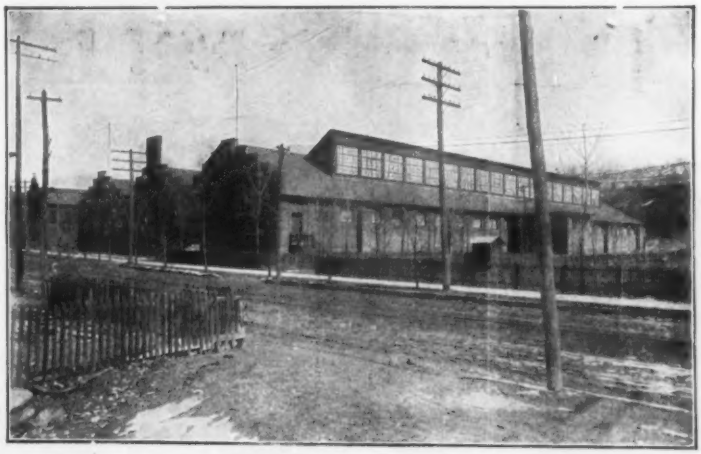
Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber—will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Wastes into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery

Archbutt-Deeley System for purifying and softening water.

JOSEPH SYKES BROS. Card Clothing for Cotton.
JAMES CRITCHLEY & SONS. Card Clothing for Woolen and Worsted.
WILSON BROS. BOBBIN CO. Bobbins, Shuttles, Etc.
THOMAS B. HAIGH. Double Loop Bands, Spinning Tape, Etc.
DRONSFIELD BROTHERS. Grinding Machinery and Emery Filleting.
HARDING'S Fallers, Pins and Circles.
The Best French and English Combing and Rubbing Aprons.
Card Flats reclothed and Lickers-in rewound.



Your Mill CAN Be Cool

during the hot days of summer—so cool that operatives rather be there than in their own homes

THAT is what manufacturers who have the CARRIER EQUIPPED mills report. But more than this—when you install a Carrier System you have a system which will furnish perfect ventilation for every room in your plant, supplying warm air in winter, cool air in summer, and humidity all the year 'round.

It is the only air conditioning system which combines all these essential features. Actually increases production, lessens waste, enables better yarn and fabric, preserves the health of operatives, and keeps them content in extreme weather. Operates automatically.

WE HAVE A CATALOG FOR YOU

Carrier Air Conditioning Co.

Of America

No. 39 Cortlandt Street, New York City.

BUFFALO, 490 Broadway

NEW ENGLAND
176 Federal Street
Boston, Mass.

CHICAGO
Ft. Dearborn Bldg.
Clark and Monroe Sts.

PHILADELPHIA
732 Real Estate Trust Bldg.

COTTON MILL MACHINERY

Carding Spinning

MASON MACHINE WORKS

Drawing Weaving

Works and General Office at Taunton, Mass.
Boston Office, 77 Franklin St., Arthur R. Sharp, Treas.
Southern Office, Greenville, S. C., Edwin Howard

The History of a Factory Ceiling

(From actual photograph)

It was painted with a cold water paint. It flaked off until it looked like A. Then it was scraped and given a finish that lasted—a glossy, tile-like, permanent coating of

RICE'S MILL WHITE

Rice's Mill White is the only oil paint (without varnish) giving a glossy, tile-like finish. It will give you 19 to 36 per cent more light than you had before. It can be washed like tile. It will not collect dirt, germs and odors like a flat paint. It will not scale and require frequent renewals like a cold water paint. It will not "alligator" and crack under the jar of machinery, like a varnish paint. *It stays white longer than any other gloss paint.*

The Original Mill White

Rice's Mill White made a trade name of the words "Mill White." It has no substitute. No other paint manufacturer can use the Rice process. No imitation has its elastic, permanent qualities. For ten years it has been unequalled for illuminating power, sanitary qualities and low ultimate cost.

Write for Booklet and Sample Board

Ask for a copy of our booklet, "More Light." Write today.

U. S. Gutta Percha Paint Company

No. 20 Dudley Street, Providence, R. I.

Parks' Piping Parables

You never know a man thoroughly until you have bought something from him — and paid him.

Lots of Hot Water.

Lots of hot water when wanted, is what some of the textile men tell us bothers them the most. Especially in dye houses and bleacheries.

With the Parko System of hot water heating, this can be most certainly arranged.

Hot water has this advantage—it stores up heat; or rather it doesn't lose the heat as fast as steam.

Hence, it can be "stored up" without undue waste when you have the heat to spare—and sudden calls for a lot of hot water can be "cashed in" without a big pull on the boilers.

Ordinarily this is done with wasted heat—and by so doing, creates a reserve to be called on as dyeing or bleaching processes demand.

Please remember that we stand ready to give your "heat unit" problem careful and personal attention. If such a matter is under consideration we will have one of our engineers call and go into it carefully.

Our recommendations are made from your stand-point. We don't want this sort of business unless it's a winner—for you.

—÷—

When it comes to our engineers trying to interest a wood burning plant in a fuel saving proposition it does seem like carrying coals to Newcastle—so to speak.

Usually the manager comes back with the retort that fuel aint no object at all; cause why, if they didn't burn it under the boiler, they'd have to take it out in the back lot and do it anyhow.

Sometime ago one of our inquisitive salesmen met the president of a large wood working plant on the train, and what do you think, they both got to talking shop.

'Twas something like this. A number of new machines had been installed in the plant. At times, and especially when all the machines happened to be thrown on at once, the engine, like Abe Lincoln's description of his loquacious adversary in the law case, slowed down when the whistle blew. Only in this case it slowed down when the load came on. Reason, it took steam faster'n the bilers could make it.

Result—loss of pressure; loss of production throughout the entire plant, and in addition to this the matter of fuel beginning to be a serious one, which after a time does effect dividends.

The president had it in his mind he needed another biler, but bilers in his particular case—away down in the woods several miles from anywhere, no one near accustomed to handling or setting one—were sure expensive and he easily reckoned that one delivered and erected on the job would set him back $2,500.00 for the size and type he needed.

And still the diagnosis continued. Then our salesman talked shop. Asked about this and that and what was done with it and why and a lot more fool things. That is, I suppose the questions might have seemed so. The predominating feature of the piping salesman's escutcheon is a question mark.

But he led up to a strong conviction that what was needed was not a new biler, but a little more economical use of the steam already available. Said he could save the purchase of the biler.

And finally, being of a persuasive nature, he was allowed to make the change.

On account of the remoteness of the plant, these changes were rather more expensive, than would be usual, so if he didn't make good there would be something doing.

And did he make good?

Let the following from the customer tell in language less flamboyant, but more eloquent than mine, the result of this happenstance on a railroad train.

"Will mention for your information, that, since this work was completed, we have an abundance of fuel, and it is more difficult to prevent the steam from blowing off than it is to make steam, so I think I can say it is a marked success for which we are all grateful."

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts

The Turbo in Action
- What that Action Means

Humidifying with the Turbo means- first of all - pure water, completely vaporized - and used but once.

It means that dust, soot, lint, and disease germs are prevented from gathering.

It means the elimination of fly and static electricity - and the end of oozy yarn.

It means restoring to the yarn its natural moisture - putting back the weight that was there when you bought it and thus saving money for you.

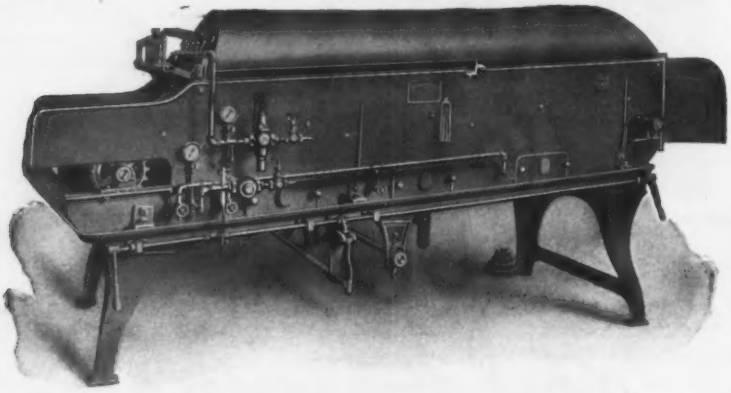
Send for Turbo catalog - its full of meaning.

The G. M. Parks Company
Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building. J. S. Cothran, Mgr.

The Yarn Conditioning Machine

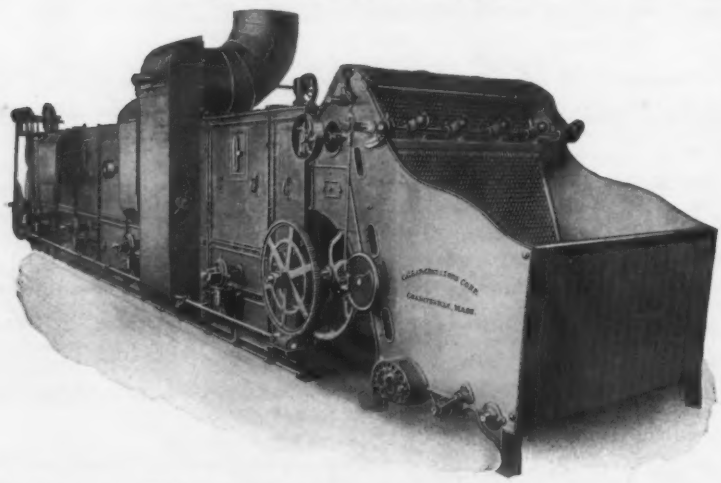
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

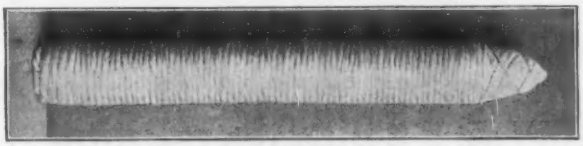
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



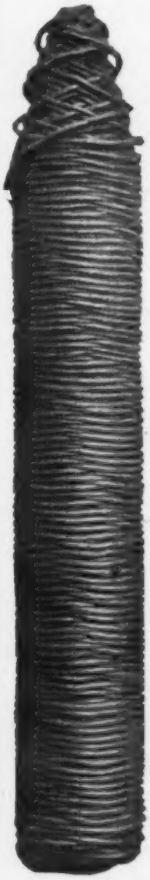
Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.

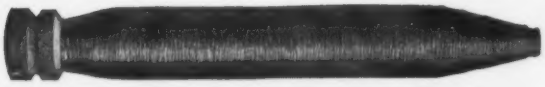


No. 2

No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long. Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.



No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.



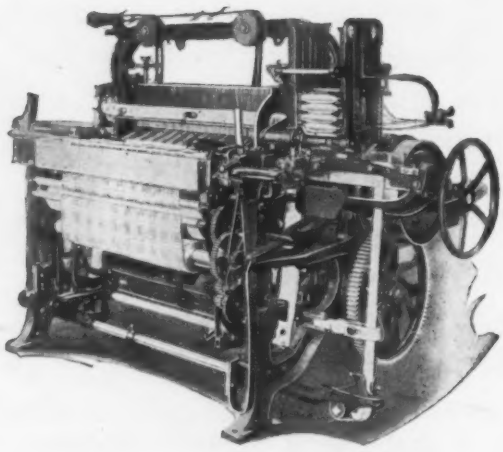
No. 1 No. 4 No. 3

OSWALD LEVER CO., Inc.

Lehigh Avenue and Front Street, Philadelphia, Pa.

Builders of Textile Machinery WINDERS ESPECIALLY

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

SPECIAL MILL SUPPLIES
THAT HELP INCREASE PRODUCTION

New Hand Threading Shuttle

This new patented shuttle is the simplest, most effective, and quickly threaded shuttle made. It can be operated with the finest silk or the coarsest filling—will not unthread—it is arranged so that lint may be easily removed, and so that felt can be inserted for tension purposes. It complies with the Massachusetts sanitary shuttle law.

Never-Slip Cop Spindles and Tubes

We can guarantee that with this combination you can run your looms faster and with longer cops than with any other spindles or tubes. With this arrangement there is no waste of filling.

Paper Cop Tubes, Cones and Shells

We make a complete line of these, all of the very finest quality—samples sent free on request.

Shuttles and Shuttle Irons

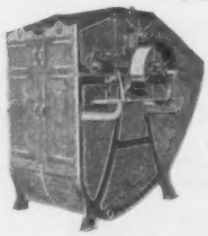
MADE FOR ALL TEXTILE PURPOSES

When in need of any of these products, all of which are fully patented and protected, give us a trial order —we can guarantee you complete satisfaction.

American Textile Specialty Machinery Co.

670 Eddy Street, - Providence, R. I.

Also 13th St. and Boulevard, Long Island City



The Hunter

NO. 10
FULLING
MILL

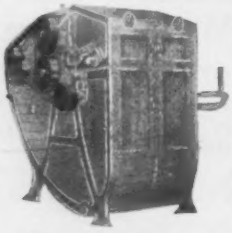
DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

SOAPING
MACHINES



BELT DRIVE

ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

ECONOMY AND SAFETY

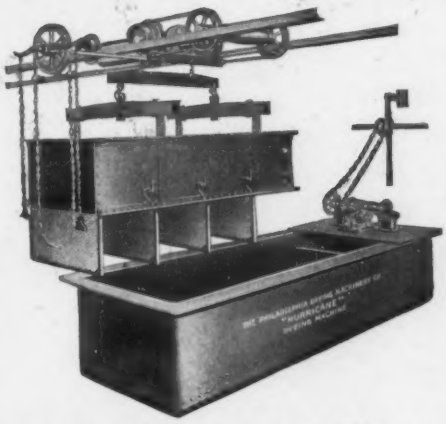
YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

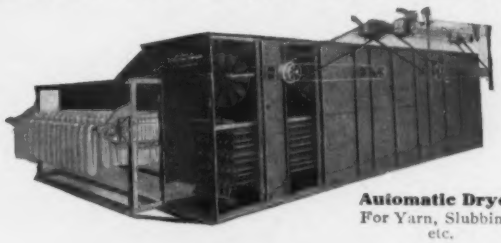
The best and mosteconomical Dyeing Machines



BETTER DYEING at LESS EXPENSE

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types



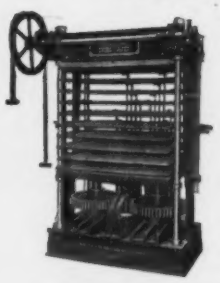
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

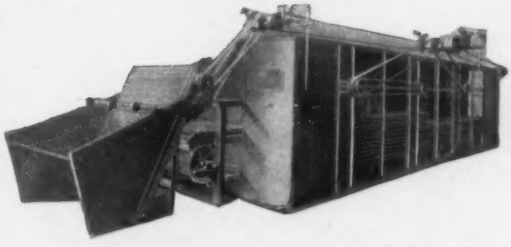
STEEL CONSTRUCTION
INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

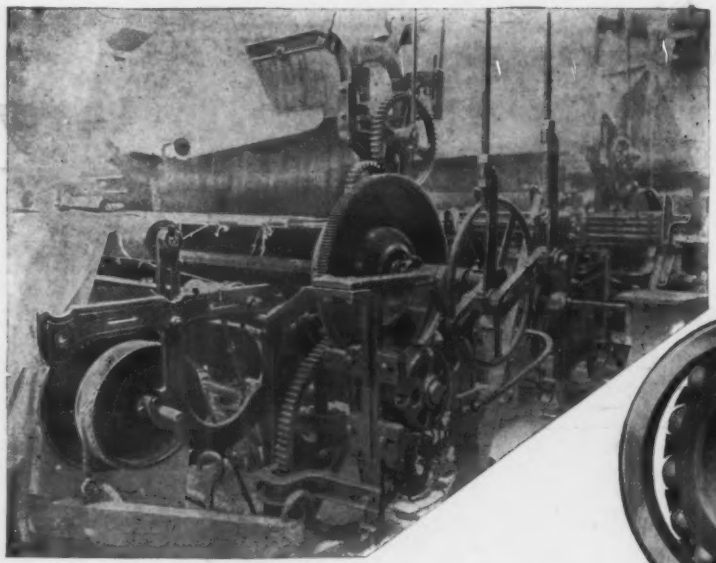
Motor and Belt Driven



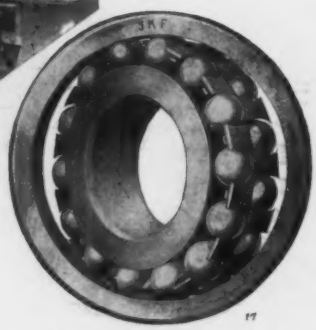
AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**



Jacquard Loom Driven by Ball Bearing Motor



S K F Radial Bearing in Deflected Position

A Friendly Tip.

Our representative, in calling upon you, has a definite object. It is not merely to sell Ball Bearings, but also methods for increasing your manufacturing efficiency.

When an S. K. F. representative calls, therefore, his desire is to study your conditions, to determine definitely what you will gain by using

SKF Self-Aligning Ball Bearings

We sell Ball Bearings and Service. He will tell you about both.

Have you these bulletins?

S. K. F. Ball Bearings on Electric Motors, No. 16-M
S. K. F. Ball Bearings on Textile Machines, No. 14-M
S. K. F. Ball Bearings on Hangers, No. 13-M

These bulletins are sent on request.

SKF BALL BEARING CO.

50 CHURCH ST., NEW YORK.

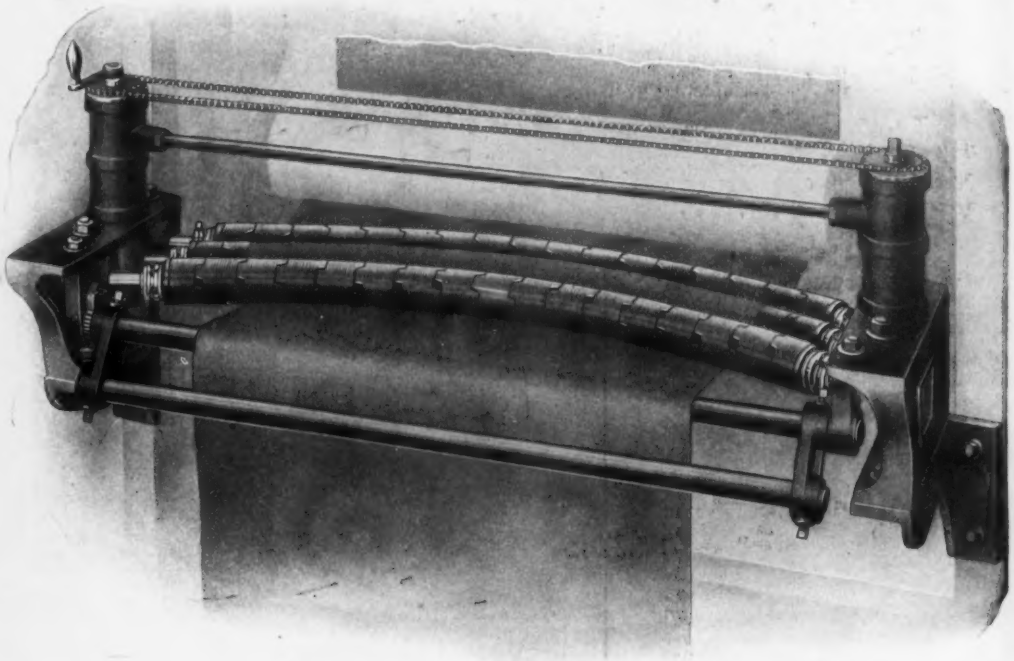
THOMAS LEYLAND & COMPANY

F. T. Walsh, Manager

60 India Street, Boston, Mass. WORKS AT READVILLE, MASS.

Sole Manufacturers of THE WILLIAM MYCOCK

Improved Regulating Cloth Expander

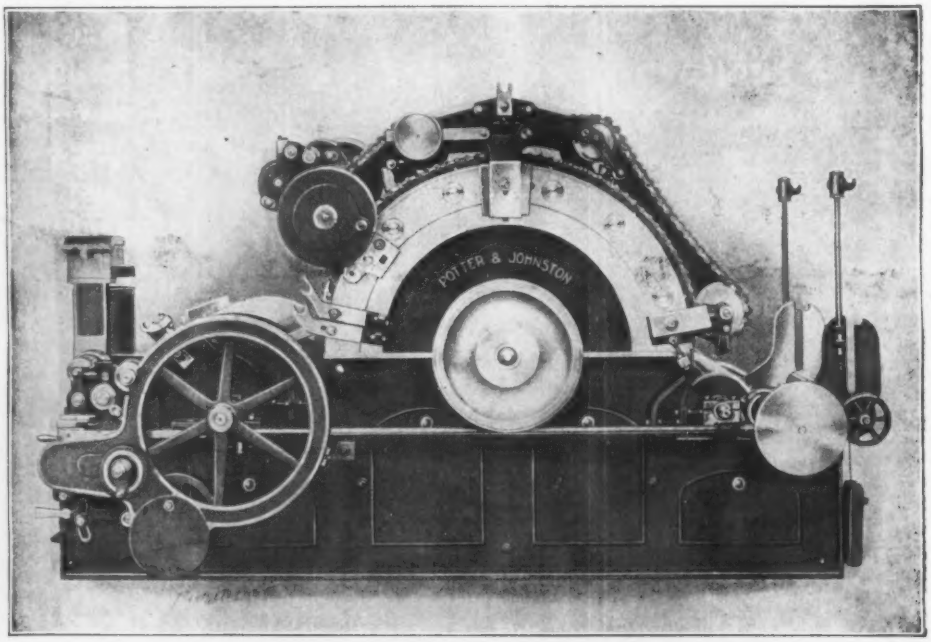


Expander attached to Calendar showing Regulating Motion and Adjustable Tension Bars

This Expander and its improved features are fully protected by basic United States patents, under which the builders will maintain their patent rights against any who may violate such rights by building, selling or using machines of this character.

Scutchers, Sewing Machines, Open Bleaching Machines, Blanket Washers for Calico Printers, Guides, Etc.

Cotton Machinery by Specialists



Notice Small Amount of Belting
Required on This Card

Potter & Johnston Machine Co.

Southern Representative:
J. H. MAYES, Independence Bldg.
Charlotte, N. C.

Northern Representative:
WM. V. THRELFALL, Marshall Bldg.
Boston, Mass.

Cotton Machinery by Specialists

Pickers and Revolving Flat Cards

POTTER & JOHNSTON MACHINE CO.

Pawtucket, R. I.

Drawing and Roving Machinery

WOONSOCKET MACHINE & PRESS CO.

Woonsocket, R. I.

Ring Spinning and Twisting Frames

FALES & JENKS MACHINE CO.

Pawtucket, R. I.

Spoolers, Winders and Reels

EASTON & BURNHAM MACHINE CO.

Pawtucket, R. I.

Southern Representative:
J. H. MAYES, Independence Bldg.
Charlotte, N. C.

Northern Representative:
WM. V. THRELFALL, Marshall Bldg.
Boston, Mass.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

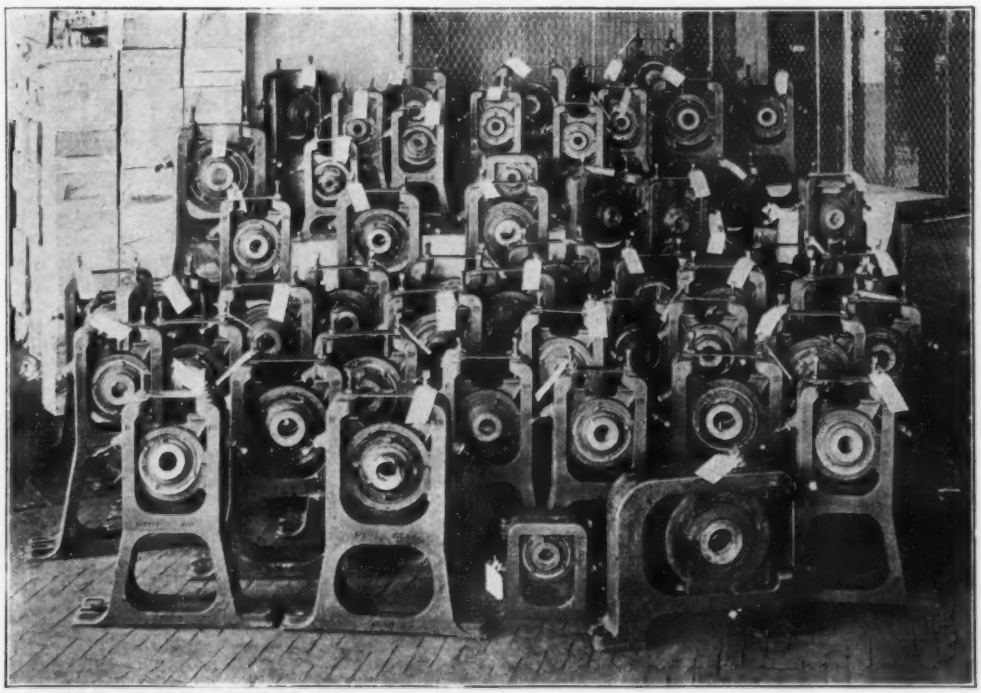
We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

One shipment of 57 Hess-Bright Ball Bearing Hangers—a single order to one of America's largest manufacturing companies



WHY DID WE GET THIS ORDER?

Because investigation and tests had demonstrated that the following points (which make for efficiency and hence for ultimate economy) were and are characteristic of Hess-Bright Ball Bearing Hangers.

The adjusting screws are arranged at an angle, pressing against feet located on the yoke below the body of the bearing box, thus **overcoming any chance of distortion of the box, and hence of the bearing** due to excessive set-screw pressure.

They are of hollow box construction, comparatively light, but extremely rigid. The box has a spherically shaped body which is held in a spherically machined yoke, allowing a perfect universal swiveling freedom.

Oiling is required only once or twice a year. Its use promotes cleanliness, since the form of enclosure prevents leakage of oil.

If you want these economies for your mill consult our Engineering Department, without obligating yourself to buy.

Interesting Catalog sent free on request

The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Front Street and Erie Avenue, - Philadelphia, Pa.

PHILADELPHIA, 666 N. Broad St. NEW YORK, 1974 Broadway
CHICAGO, 1800 Michigan Ave.

HESS-BRIGHT

HB DWF

BALL BEARINGS

→ **See next issue for advertisement of Hess-Bright Ball Bearings applied to textile machinery** ←

A. W. BUHLMANN

Textile Engineer

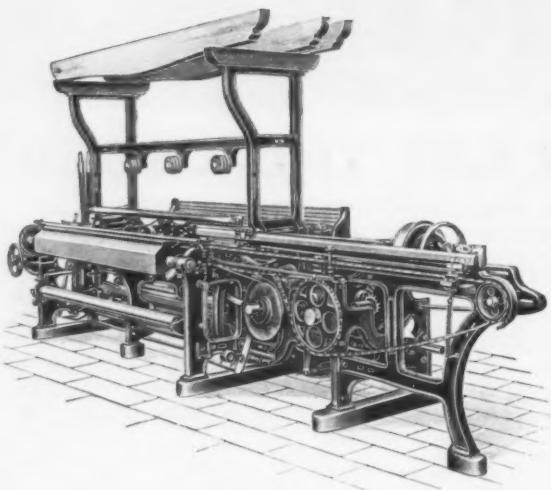
200 FIFTH AVENUE, - - NEW YORK

REPRESENTING

Saechsische Webstuhlfabrik

(Louis Schoenherr)

CHEMNITZ



NEW:

Combined *Carpet Shearing*, brushing and steaming machines, 20 feet wide

THE CALL IS FOR

Seamless Rugs

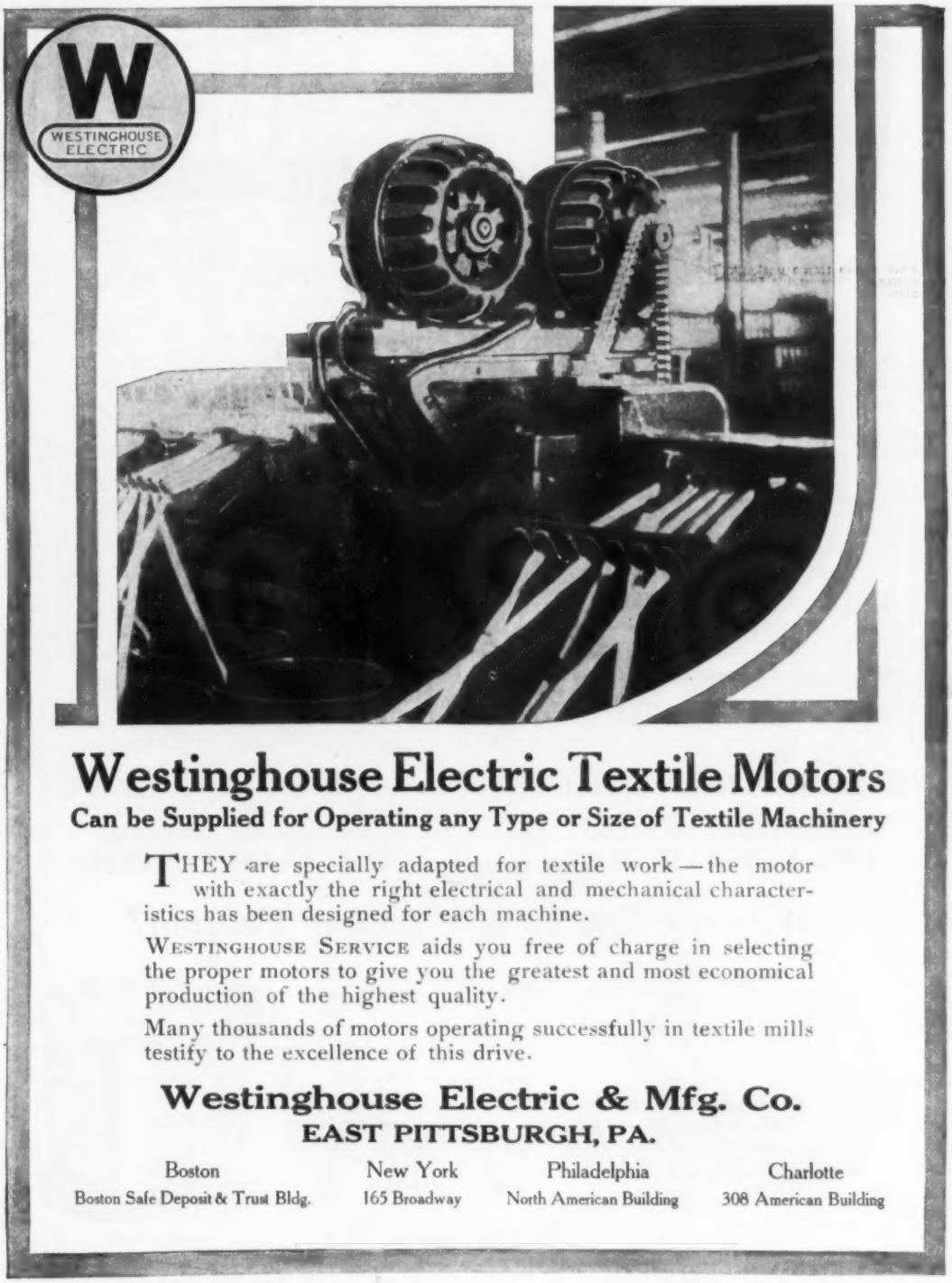
The Schoenherr Loom for seamless

Velvets
Brussels
and Wiltons

is the product of 60 years experience in loom construction.

Built 4/4, 6/4, 8/4, 12/4 and 16/4 wide

CONSULT ME



Westinghouse Electric Textile Motors

Can be Supplied for Operating any Type or Size of Textile Machinery

THEY are specially adapted for textile work — the motor with exactly the right electrical and mechanical characteristics has been designed for each machine.

WESTINGHOUSE SERVICE aids you free of charge in selecting the proper motors to give you the greatest and most economical production of the highest quality.

Many thousands of motors operating successfully in textile mills testify to the excellence of this drive.

Westinghouse Electric & Mfg. Co.

EAST PITTSBURGH, PA.

Boston	New York	Philadelphia	Charlotte
Boston Safe Deposit & Trust Bldg.	165 Broadway	North American Building	308 American Building

FIG. 20.

Oblong Style

Heavy, strong cotton duck. Leather binding. Full length frame pockets. Handles securely fastened. Renewable hardwood shoes. Made also with iron shoes (Fig. 38) dragged but little.

Lane Canvas Mill Baskets

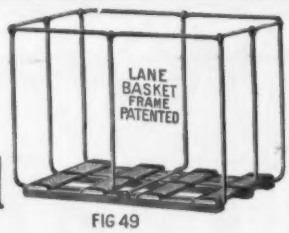


FIG 49

Lane Basket Frame

Round spring steel. Uprights fastened to hoop by *flexible eyejoints*, guaranteed against breakage. Light and exceedingly strong.

Boxes and Trucks

Essentially

Profit Makers

Lane	*Others*
Smooth, flexible surfaces	Nails, splinters, unyielding
ELIMINATE WASTE	**MAKE WASTE**
Light Weight	Heavy and Clumsy
GREATER HELP EFFICIENCY	**UNNECESSARY FATIGUE**
Life measured by years	Their days are numbered
LOW ULTIMATE COST	**HIGH YEARLY EXPENSE**

Why not line up in the Lane Column?

FIG. 27

Lane Truck

Made as shown, or *with Duck Partition*. Mounted on stationary frame casters, with *thread guards*, as above, or on swivel frame casters.

"A Style for every use"

Write for Catalog and Prices

W. T. Lane & Bro.

Manufacturers

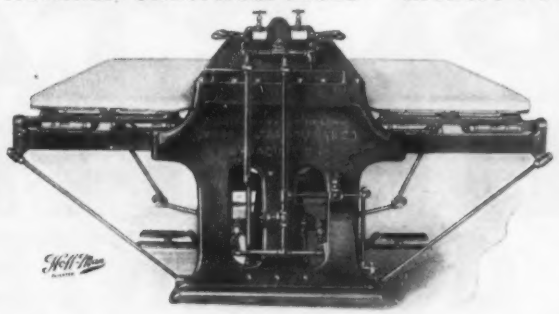
Poughkeepsie, N.Y.

FIG. 22.

Round Taper

Materials and constuction same as Fig. 20. Made also with iron shoes (Fig. 38) if desired.

Hoffman Underwear Press --- Model F F F



The press pictured above applies hot dry steam to the garment direct. Because of its unequalled capacity and the ease with which the operator can produce either a hard and flat or high and lofty finish this machine is now the most popular underwear press on the market. And that accounts for the fact that it is so extensively used by leading mills in America, Canada, Great Britain, France and Germany. It can be installed anywhere in your mill as an independent unit. Send for detailed information.

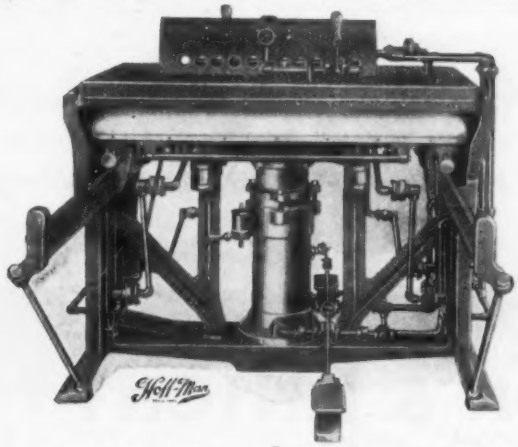
IF YOU WANT PRESSES FOR KNITTING MILLS, WRITE TO

UNITED STATES HOFFMAN CO.

SYRACUSE - - - NEW YORK

"INCREASE THE CAPACITY — MAINTAIN THE QUALITY"

You can get the hosiery selling agents to boost your line if you use the hosiery press shown below—they indorse the Hoffman method. The direct application of hot dry steam to the hosiery produces a superior finish that helps increase sales. This press has no power consuming mechanism. Only two connecting steam pipes are needed: one a feed pipe from the factory boiler to the machine—the other for exhaust. It is the most satisfactory equipment for pressing silk hosiery. This press also can be installed anywhere in your mill as an independent unit. Write for full details.



Hoffman Model L Hosiery Press

SPARTAN BELTING GUARANTEE

"We guarantee that Spartan Belting will withstand exposure to either hot or cold air, water-steam-oil-gases-and heat generated by excessive pulley friction:

That owing to its unusual pliability it will grip the pulley better-run with less tension and reduce the friction load:

That under proper mechanical conditions it will transmit power with greater economy than any other material in use, thereby reducing the cost of power transmission:

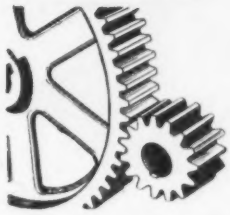
That it will, when used under the same conditions outwear any other belting material, saving loss of time and cost of replacement.

We, further, guarantee that if any Belt should prove defective by reason of fault in material or workmanship, we will furnish a new belt, or repair the defective part."

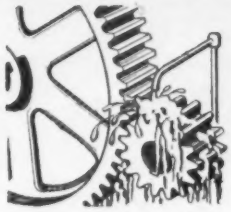
GRATON & KNIGHT
M'F'G. CO.
WORCESTER MASS.

G&K SPARTAN

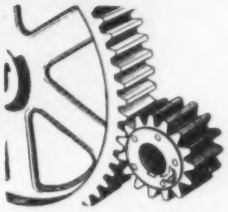
GOOD BETTER BEST



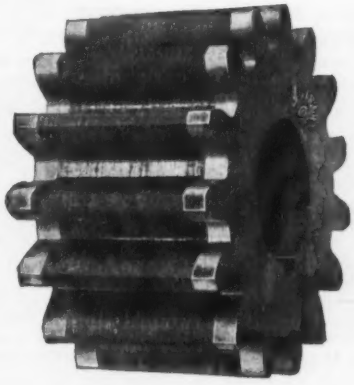
An accurately machined steel pinion meshing with an accurately machined gear is tolerably quiet when new—that is, providing the shaft alignment is perfect.



And a generous supply of oil continually poured onto the gears will decrease the noise. But after the gears are worn no amount of oil will quiet them.



A New Process pinion meshing with it's mate is always quiet regardless of age and wear of either gear. No oil. No noise. No trouble. A comfort to your men.



Ordinary engineering experience must tell you that machine parts last longer where vibration is minimized—that metal-to-rawhide tooth contacts offer real protection from gear breakage under sudden load imposition.

Considering also that rawhide pinions, as made by us, are as durable as metal and that the relief you get from distracting noises really costs nothing, the wisdom of using New Process Pinions is readily apparent.

Let us submit evidence of what New Process Pinions are doing under conditions similiar to your own. Ask for book—"Noiseless Gear Driving."

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

N.P.R.H. © REG. U.S. PAT. OFF.

NEW PROCESS GEAR CORPORATION

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SYRACUSE, N.Y.

Canadian Agents: Robert Gardner & Son, Ltd., Montreal

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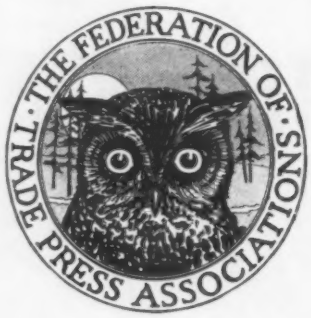

A Special Invitation

to Every Manufacturer, Sales Manager, Advertising Man, Trade Paper Editor and Publisher in the Country

REGARDLESS of what your interest in trade journals may be, you are, in one way or another, a partner in the development of business building and business expansion through the medium of the Business Press. Any advance in trade journalism is of more than pocket-book interest to you. That your individual influence may be recorded—that you may add the light of your experience to that of the notable technical, class and trade journal editors and publishers in the country—you should cross three red-letter days on your desk pad and attend the

9th Annual Convention of The Federation of Trade Press Associations at the Congress Hotel, Chicago, Sept. 24, 25, 26

Bring with you anything you have to offer in the way of suggestions bearing on editorial, circulation, or advertising policies. Or, if you do nothing more, come and listen to those who are making the trade press movement so tremendous a factor in modern business efficiency. One new idea gleaned from this fraternity, banded together for *your* interests, will make your presence at this convention pay you dividends.

Business Building Through the Business Press

For Further Information Address

E. R. SHAW, Chairman Committee on Arrangements

537 South Dearborn Street, Chicago

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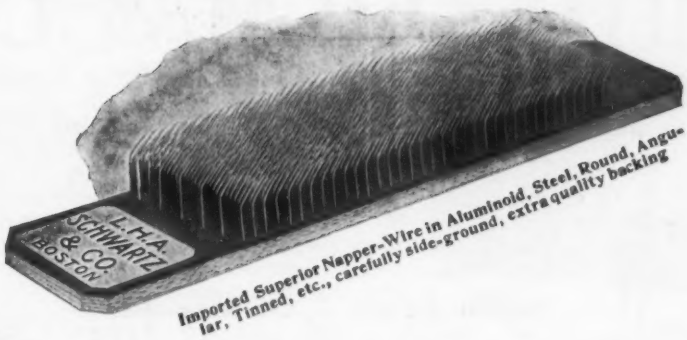
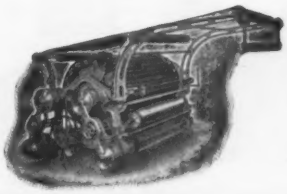
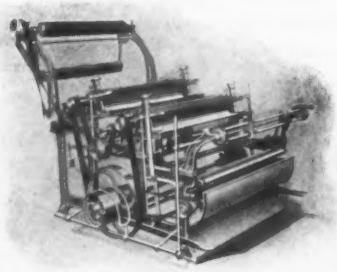
F. D. PORTER, Pres. *Chicago* — JOHN CLYDE OSWALD, Vice-Pres. *New York* — E. E. HAIGHT, Sec'y-Treas. *Chicago*



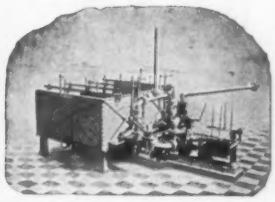
Imported Superior Napper-Wire in Aluminoid, Steel, Round, Angular, Tinned, etc., carefully side-ground, extra quality backing



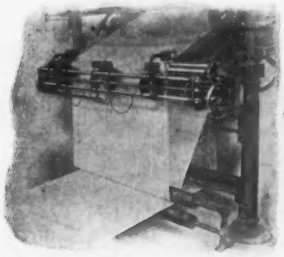
Monforts' Napper



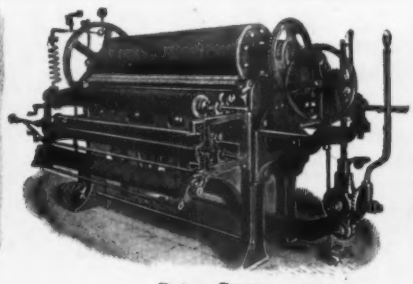
Monforts' Special Shear for Napped Cloth



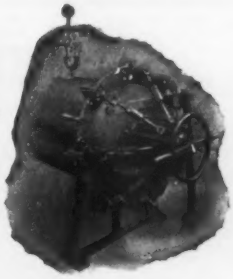
Cross-Spool Dyeing Machine



Automatic Electrical Feeder for Tentering, Drying Machines, Calenders, Etc.



Rotary Press



Klug Dry Decating Machine

New Monforts' Emery Cloth Grinding Machine, Paul Klug Dry and Wet Decating, Rotary Presses, Fulling Machines, Tentering and Drying Machines with Automatic Electric Feeder, Cross Spool and Beam Dyeing. The new process Niederlahnstein Automatic Hank Mercerizing, Card and Napper Clothing, etc.

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40 Central Street, Boston, Mass.

Dealers in China, India, Egyptian and American Cottons

SMITH, DRUM & CO.

"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

SAVE LABOR and **DYE STUFF** and do **BETTER WORK**
in your dye house by using

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Full particulars on application

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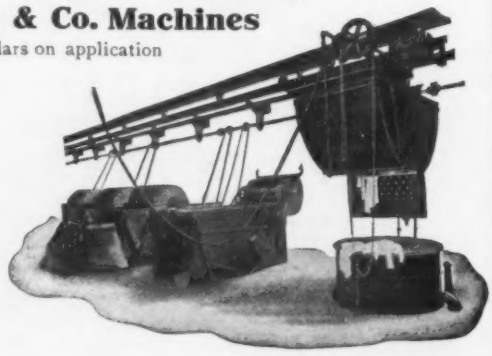

LAWSON'S

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery
For the Manufacture of
Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machines.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

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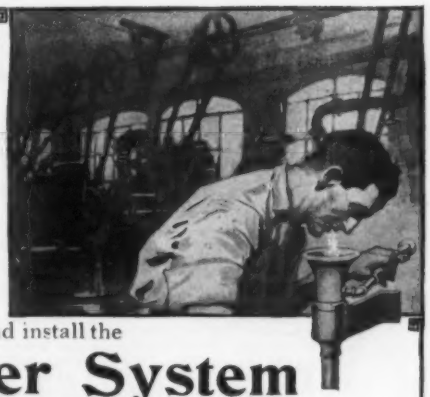
Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

Properly Cooled Drinking Water is as important as good light and fresh air



FACTORY statistics prove that water cooled with ice is a menace to health. Ice frequently contaminates. In many cases extreme coldness of ice water causes serious illness, and very frequently causes discomfort that lowers the efficiency of operatives without compelling them to leave their work. And *you* are the loser. Throw out the unsanitary, vitality-lowering, wasteful water cooler and install the

JM Drinking Water System

Using A-S Refrigerating Machine

This system insures an abundance of pure water, maintained automatically at the temperature best suited to health—neither too warm nor too cold. Operated by electricity or any other power available. The turn of a switch starts and stops it. No attendant necessary. No ammonia, no repairs, no chemicals to renew, explosion impossible. The porcelain bubbler fountain used in connection with this system affords an economical, sanitary means of distributing the water.

Write our nearest branch for Catalogue

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos Roofings; Pipe Coverings; Packings: Mastic Flooring: Conduit; Stack Lining; Fireproof Paint; Fire Extinguishers; Fuses; Etc.

Albany	Chicago	Detroit	Louisville	New York	San Francisco	
Baltimore	Cincinnati	Indianapolis	Milwaukee	Omaha	Seattle	
Boston	Cleveland	Kansas City	Minneapolis	Philadelphia	St. Louis	
Buffalo	Dallas	Los Angeles	New Orleans	Pittsburgh	Syracuse	2505

BIRCH BROTHERS

ALBERT BIRCH, TEXTILE MECHANICIAN — SOMERVILLE, MASS.

Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

BIRCH TREE.

"Coronation" Piece-End Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

Send for Circular

Also Makers of

Dyeing and Finishing Machinery

Scutchers, Openers, Folders, Crabbing and Soaping Machinery

126 Years' Experience

Yours When You Buy Belting, Hose or Packing

When considering the purchase of belting, hose, packing or valves, bear in mind the experience back of every Goodyear product.

In the mechanical goods sales department of this company are 21 experts whose combined experience in this one field exceeds 126 years.

The chief of this body of experts has had 27 years' successful experience in this one special line of endeavor.

These men direct the work of other high-grade men—which means that every Goodyear product, from the smallest Goodyear Valve to the master Transmission Belt, represents the very best for the purpose.

What it Means

This means that 126 years of *efficiency* experience is yours when you buy Goodyear equipment for your plant.

It means that you are assured of super-service. No Goodyear product is made to "meet a price." None is made to "conform to a standard."

Every Goodyear product is made to set a new standard of service and efficiency based on scientific knowledge of actual working conditions. Each is built for the specific purpose—to prove its value and economy through *service*.

Ask These Men

It costs nothing to consult these men. No obligation is involved in asking questions. These men will counsel you not only when you're "in doubt"—but even when you're "pretty sure". Their knowledge and service rise above the commonplace.

Ask these men about your belting, hose, packing, valves. They will tell you just what Goodyear product you need—and why. You would look askance at any equipment that came to you free. *Then why PAY for unknown quality.*

The best is always the most economical. And in Goodyear equipment you get super-service.

GOODYEAR
AKRON, OHIO
Plant Equipment

The Goodyear Tire and Rubber Company Mechanical Goods Department **Akron, Ohio**

Toronto, Canada — London, England — Mexico City, Mexico

Write Us on Anything You Want in Rubber

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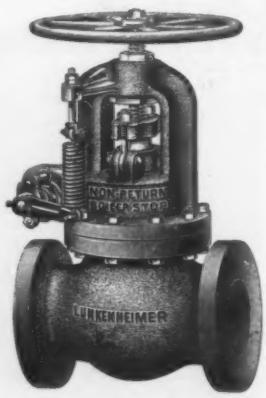

LUNKENHEIMER

Non-Return Safety Boiler Stop Valve

Prevents steam from other boilers of a battery discharging into one that is disabled. A sudden decrease in pressure in any boiler will cause a Lunkenheimer Non-return Safety Boiler Stop Valve attached to that boiler to immediately close, and will not open until the pressure equalizes that of the other boilers in the battery. Among other products manufactured by The Lunkenheimer Company may be mentioned Globe, Angle, Cross, Check, Lever, Gate, Pop Safety, Relief, Throttle, Blow-off, Screw Down Check Valves, etc. "*Puddled*" *Semi-steel and Cast-steel* Valves of all types; Water Columns, Gauges and other Boiler Mountings; Whistles and Ground Key Work of all descriptions; Injectors and Ejectors; Lubricators and Lubricating Devices; Oil Pumps, Oil and Grease Cups, Gasoline Engine Appliances, etc. Your local dealer can furnish them; if not, write us.

A complete description, with illustrations of the Non-return Safety Boiler Stop Valve, together with the entire line, can be had by referring to Lunkenheimer Catalogue No. 50. Write for a copy.

THE LUNKENHEIMER CO.

"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World

New York — Chicago — **CINCINNATI, OHIO** — Boston — London

10-54b

When You Want Transmission Rope In a Hurry

¶ When a breakdown occurs on one of your rope drives, it ties up your plant. You are losing money. Then—

Wire For

AMERICAN

TRANSMISSION ROPE

¶ Any size—any length. We will ship it to you the same day from the nearest point. Think of the time—and time means money—you will save in getting started up again.

¶ And remember,—when you put AMERICAN TRANSMISSION ROPE on your drives you are taking out the very best insurance against future breakdowns. There 's another economy argument.

¶ The rope is laid with a special lubricant that eliminates internal friction. Nothing but the purest, longest and strongest Manila hemp is used; careful inspection and testing ensure uniform grade and guarantee the maximum of service.

¶ The sterling wearing qualities of AMERICAN TRANSMISSION ROPE have been proved time and again on thousands of power units throughout the country.

Write for this FREE Book

Upon request on your business letterhead we will be glad to send you our "Blue Book of Rope Transmission." It contains much practical information and many helpful suggestions for transmission rope users. 17

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St. Louis Cordage Mills
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St. Louis, Missouri

Your Problems Are Being Met By KisselKar Trucks

KisselKar Trucks are not only good trucks in a general mechanical sense, but are the right trucks for YOU—IN YOUR BUSINESS. This can be proven by asking us who *in your line* are owners, and following the information by asking these owners. They will tell you that they not only received a well built, serviceable vehicle, but one which particularly suited their individual requirements.

KISSELKAR TRUCKS

It is the Kissel policy to sell only trucks that will pay—trucks adaptable in size to the needs of the buyer. We study your haulage problems and give you just the truck you should have to keep your trucking on an economical as well as a highly efficient basis—hence the range of sizes. Standard sizes: 1500 lbs., 1, 1½, 2½, 3½ and 6 tons. Bodies to order.

The KisselKar Truck portfolio with 350 illustrations is indispensable to you if you are considering the truck question. Write for it.

Kissel Motor Car Co.

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New York, Chicago, Philadelphia, Boston, St. Louis, Kansas City, Milwaukee, Minneapolis, St. Paul, San Francisco, Los Angeles, Dallas, and 300 other leading Canadian and American points.

KISSELKAR TRUCK IN TEXTILE TRADE

You Don't Buy Goulds Pumps For This Year Alone—But for the Next—and the next—and the next

Goulds Pumps are bought for the lasting service which they give and not because of low price. The first cost may be a little more than other makes but when operating costs, uninterrupted service and saving in repairs are considered Goulds Pumps prove themselves the best investment.

Goulds Pumps are now installed in practically every industry where pumps are used. In many of these places they have been operating for years with little or no repairs.

If this is the kind of service you want your pumps to give get ready for your next installation by asking for Goulds specifications and prices now.

A post card will bring you our book "How and Where Pumping Costs Can Be Reduced" and complete information on all our Textile Mill Pumps.

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LARGEST MFR. OF PUMPS FOR EVERY SERVICE

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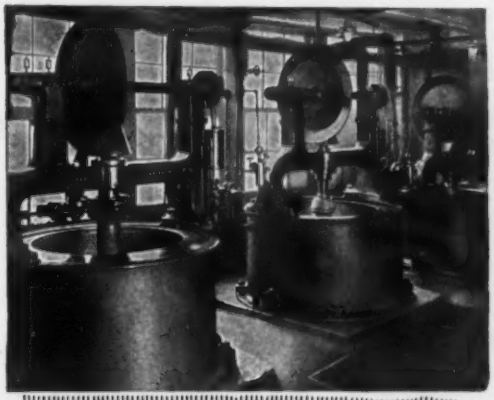

Long-Lived Smooth Running Centrifugals

These side-engine, cone-driven S. & U. Centrifugal Extractors have been in constant use for a number of years in the Philadelphia Plant of a large silk Dyeing Co. and are today giving the same satisfactory, efficient service as when first installed. This company has four S. & U. Extractors in service and has recently ordered a fifth.

Hard, constant use has little effect on

Schaum & Uhlinger Centrifugal Extractors

They are constructed from the best of material by engineers of ripe experience, thoroughly familiar with every phase of centrifugal force.

In every type of S. & U. Centrifugal, belt, steam or electric driven, will be found simplicity of design, expert workmanship and rigid fool-proof construction.

Lubrication has been provided for in a way to require the minimum of attention. Bearings and step-boxes are of improved, dependable design. The S. & U. self-balancing feature takes care of all vibration and makes necessary the minimum foundation.

An attractive new catalogue is just from the press. Write for it, now.

Schaum & Uhlinger, Inc.

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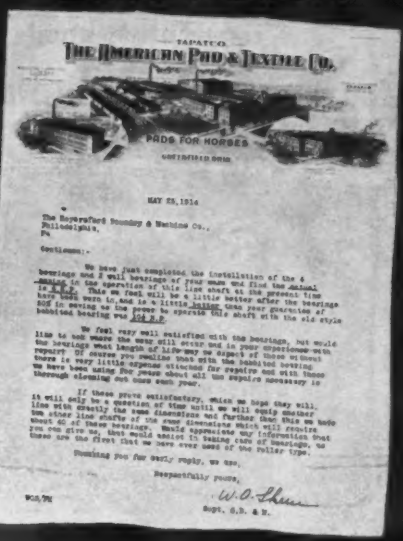
Do "Sells" Bearings Save Power?



TAPATCO

THE AMERICAN PAD & TEXTILE CO.

PADS FOR HORSES

GREENFIELD, OHIO

MAY 25, 1914

The Royersford Foundry & Machine Co.,
Philadelphia,
Pa.

Gentlemen:-

We have just completed the installation of the 4 bearings and 2 will bearings of your make and find the actual is R.P.M. This we feel will be a little better after the bearings have been worn in, and is a little better than your guarantee of 800 in saving as the power to operate this shaft with the old style babbited bearing was 10½ H.P.

We feel very well satisfied with the bearings, but would like to not where the way will stand up in your experience with regard to length of life may we expect of these without repair? Of course you realize that with the babbited bearing there is very little expense attached for repairs and with these we have been using for years about all the repairs necessary is thorough cleaning out once each year.

If these prove satisfactory, which we hope they will, it will only be a question of time until we will equip another two other line shafts of the same dimensions and further than this we have about 40 of these bearings. Would appreciate any information that you can give us, that would assist in taking care of bearings, as these are the first that we have ever used of the roller type.

Thanking you for early reply, we are,

Respectfully yours,

W.O. Shaw

Supt. G.D. & P.

WOS/W

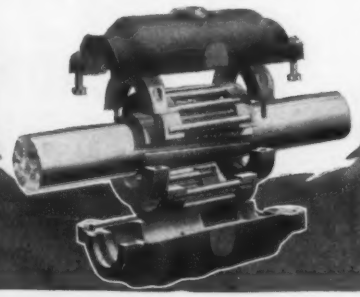
A Drop From 10½ to 4½ Horsepower

Fifty-seven and one-eighth per cent less power needed to do the work a week after "Sells" Roller Bearings were applied! This—the experience of the American Pad & Textile Co. is only one of hundreds of instances where "Sells" Bearings are cutting the cost of manufacture. And, as we will show in another letter, this saving improves from year to year *without a single cent of repair cost.*

Let us analyze your proposition now—no obligation, and an opportunity for big savings. Don't fail to write for the facts.

Royersford Foundry & Machine Co.

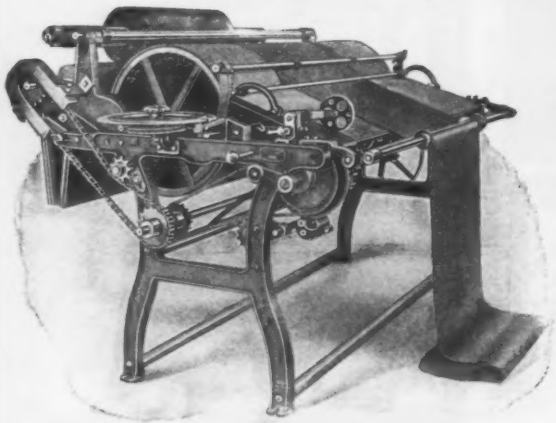
56 N. Fifth St., Philadelphia, Pa.



STOP SHORTAGE CLAIMS

by stamping each yard of your cloth with clean, conspicuous consecutive numbers exactly thirty-six inches apart

You Have to Measure Anyway Combine Yardnumbering With It



A W C MEASURER WITH YARDNUMBERING

NO REDUCTION IN OUTPUT

and the extra care and expense are trivial *It will save your money, temper and business*

The number on end always gives length of piece so it saves remeasuring

Pleases Everybody

Parks & Woolson Machine Co

Springfield - Vermont

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Laminar Fibre Roving Cans

All sizes, standard and special. Electrically Welded Tinned Steel or Fibre Rims. Steel or Wood Bottoms. Fibre or Steel Kicking Bands.

Strongest and Smoothest Can on the Market. In Use for 25 Years

Lubricate Your LOOMS With

TRADE MARK REGISTERED IN

NON-FLUID OIL

UNITED STATES PATENT OFFICE

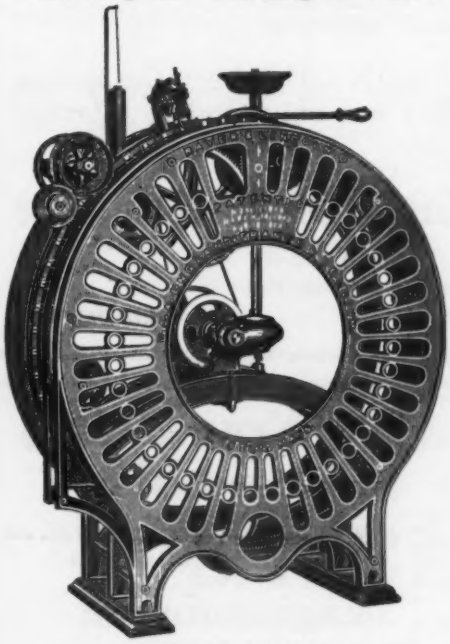
K-OO Special Grade used on CAMS is far superior to grease as it resists the shearing of opposed surfaces more effectively. It will not drain off like ordinary oil.

A-OOOOO Grade for bearings may be applied by means of a squirt can like machine oil, but unlike the latter will not drip and spatter. The danger of stained goods and messy, oily machine parts, floors, etc., is thus eliminated, while power losses decrease materially.

Write for free sample and test these claims yourself

NEW YORK & NEW JERSEY LUBRICANT CO., 165 Broadway, New York City

THE RAYER & LINCOLN
Rotary Sewing Trimming and Marking Machine



HOW IT SAVES.

It makes a fine seam at the rate of 2000 stitches a minute.

It trims the margin of the cloth outside the seam evenly and nicely, so that the whole piece can be sheared from one end to the other. The margin never curls up

It leaves no marks on "backs" or "back grays."

It marks the cloth automatically.

Send for catalog of our sewing machines.

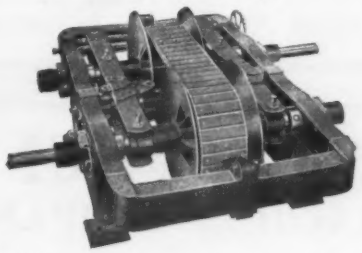
Dinsmore Manufacturing Co.
SALEM, MASS., U. S. A.

HAVE YOU?

Hundreds of the most successful Textile Mills of the country have installed

"The Reeves" **Variable Speed Transmission**

for driving dryers, tentering machines, singers, washing machines, mangles, soapers, printing machines, etc., during the past fifteen years and know from experience that it does save them time, labor, trouble and money;



That they can produce on the same machines more goods and do it at a lower cost;

That it enables them to put better quality into their goods.

There's a speed for every need—and a turn of a hand wheel gets just the speed you want without stopping or the least trouble.

Catalog T-16 tells all about it—write to-day.

Reeves Pulley Co., - Columbus, Ind.

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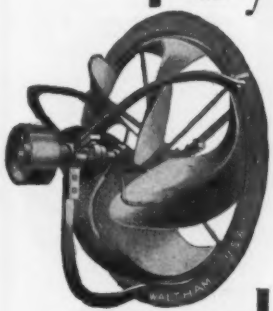

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Probably the most widely used fan in the world.

How Are Your Conditions?

Dye House Ventilation is a difficult problem. We have solved it for many others. May we not help you?

Good Conditions Attract Good Workmen

Your profits depend on skilled labor. None but the poor kind will work under unhealthy conditions. Write us before cold weather sets in.

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The condition of Aprons or Rub Rolls
is a matter of the greatest importance

PARAGON AND UNION APRON OILS keep the aprons or rub rolls soft and pliable. They not only tend to increase production but make a smooth roving.

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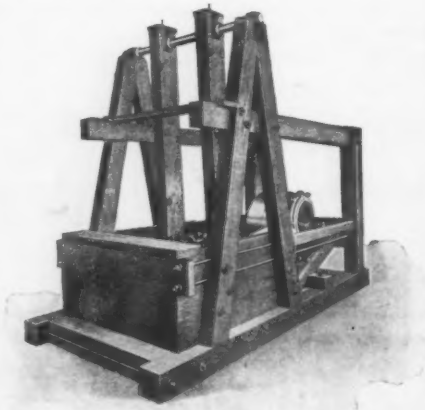

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OAK AND HARDPINE FRAME AND PLANKING : SPECIAL DOUBLE ACTING SHOCK ABSORBER : ECCENTRIC DRIVE.

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Do you contemplate a new plant, an extension or an alteration?

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Covers every detail of the construction and equipment of plants.

It gives full, practical details on location, arrangement of departments and machines, materials and comparative costs, ventilation, lighting, etc.

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When the air in a work-room is impure, stuffy, hot, dusty or steamy your employees lose their health and your stock-holders their profits.

To make a gain for both

You should use a Berry Wheel—because →

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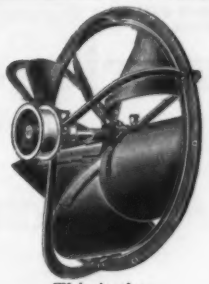

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the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

Give Your Engineer Time for Useful Work

Your engineer can be employed on more profitable work than packing leaky expansion joints if you have

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He'll never have to pack them. They never leak — they can't because made of one piece of copper. He'll never worry over the strains due to temperature changes in the steam line. He can look after your bigger interests — turbines, engines, generators, etc. It counts there. For full information write to

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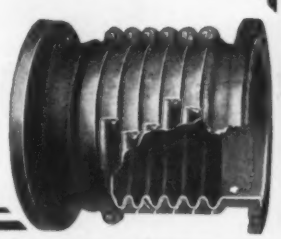
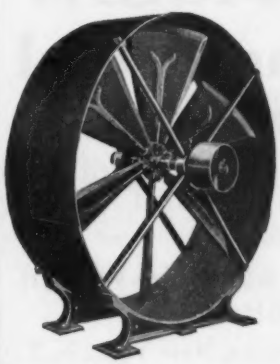


The Adjustable—High Speed PERKINS FAN



Is durable and noiseless. All around efficiency has been accomplished by years of experience. A fan for every need.

ADJUSTABLE—the blade arms may be set at any angle desired—blowing in or out.

DURABLE—steel frames, steel drums, steel arms and steel shafts.

HIGH SPEED—our self-oiling journal box reduces the friction.

We build our fans in many styles for a great variety of requirements.
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Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

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Has Been Adopted by the Representative Manufacturers of this Country.
The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
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Latest and most approved methods of

POWER TRANSMISSION

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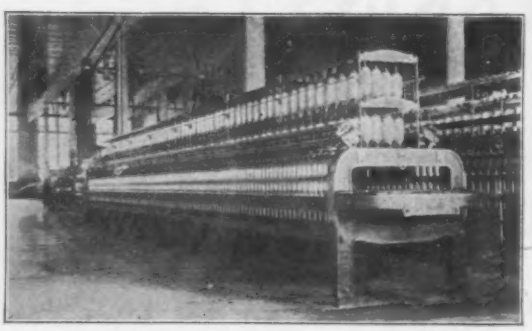
BELTS, ROPES OR GEARS

Write for full information

THE BROWN SPIN-WRIGHT



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As Operated Successfully in a Large Mill

For Particulars Address

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Power Transmission Machinery — For Every Department

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DYEING MACHINES Giles TRADE MARK

If You are Interested in

Machines for Dyeing or Bleaching Yarns

Cotton
Wool
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Write us to send you an estimate of cost of installing an equipment as well as the economies in labor and steam that can be made.

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Elevators Especially Adapted for Textile Mills

Protect Yourself Against Liability Laws

We make a specialty of attaching to Elevators, already in use, Automatic Folding Hatch Doors, Semi and Full Automatic Gates, Automatic Locking and Stopping Devices, Automatic Car Safety Attachments, etc.

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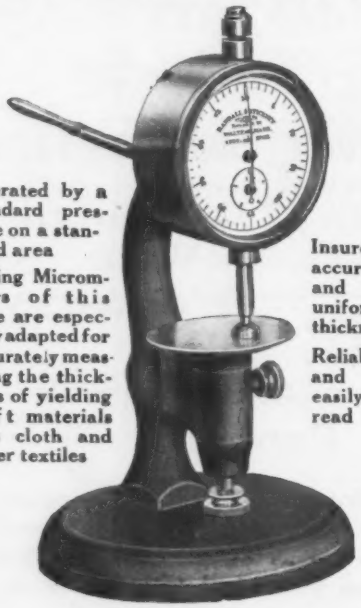
Thickness Gauge

For Textile Manufacturers

which will determine the thickness of textile materials within .001 inch



Operated by a standard pressure on a standard area

Spring Micrometers of this type are especially adapted for accurately measuring the thickness of yielding soft materials like cloth and other textiles

Insures accurate and uniform thickness

Reliable and easily read

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that are equipped with Murphy Furnaces are operating at lower cost than others, because although getting more power they are

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Murphy Furnaces are adaptable to any kind and any size of boiler—are automatic in all their functions—handle efficiently heavy overloads with minimum attention—
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The Murphy Catalog has started many a power plant toward big savings

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RELIANCE CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; **drying oilcloth,** or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster **department** for shrinking uniform cloth.

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Reliance Machine Works

Frankford. Phila.

The Powell "Mac" Patent Compression Grease Cup

Fig. 864 M

Sectional

Our "Mac" Automatic Grease Cup is of cast brass highly finished. It is the best grease cup of its type now on the market, construction is similar to our Renown, having a leather packed plunger, a simple feed adjustment, and automatic lock arrangement, which precludes any possibility of feed being cut off by the jarring of machinery.

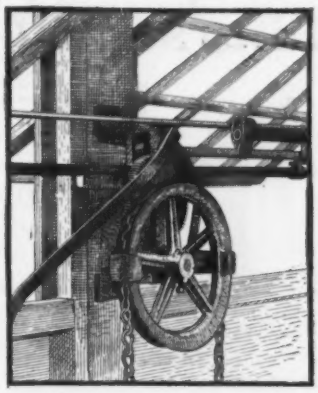
DIRECTIONS

To fill cup, screw plunger to the top, by turning jamb nut "N" to the right, unscrew bonnet from base and refill with grease. The base remaining in its position.

THE WM POWELL CO.

DEPENDABLE ENGINEERING SPECIALTIES

CINCINNATI, O.



When the old thermometer goes up production lets down. Between the heat of your plant and the heat of the sun your men get the worst of a mighty hot deal. Give them the "STRAIGHT-PUSH" chance to keep up their efficiency. They need the cool air to do their work as much as you need the cold cash from their work.

You can learn all about successful ventilation from our catalog. Ask us to send it.

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Adjustable Thread Guide

Cheapest to Buy

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Absolute and Rigid Adjustment

Mail Guide Block for Free Sample

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TEXTILE MILL EFFICIENCY IS ADVANCED BY THE RIGHT KIND OF BELT DRESSING
STEPHENSON BAR BELT DRESSING SAVES
-FUEL
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HERE'S YOUR CHANCE TO PROVE THIS WITHOUT COST
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letterhead or
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Belt, Engine and Motor Driven

Sizes 12" to 72"

Dye Tubs and Tanks

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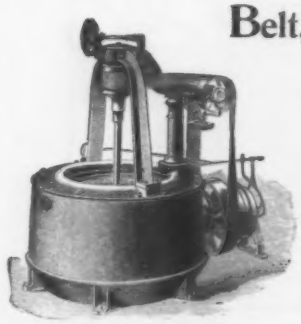
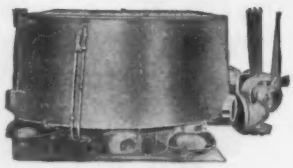


Over Driven Extractor



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TOLHURST MACHINE WORKS, Troy, N.Y.

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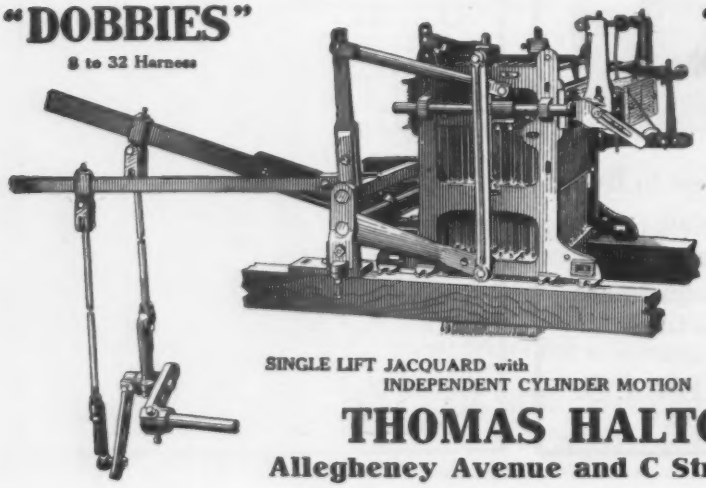

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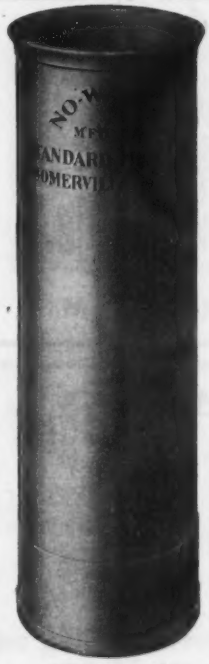

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"No-Waste"

Seamless Hard Fibre Roving Can

It does not have the riveted seam that strains and breaks the sliver

NO SEAMS OR RIVETS

ABSOLUTELY SMOOTH

Also

Fibre and Steel Clad Cars
Doffing Trucks
and
Mill Boxes All Kinds

Sheet Fibre Tubes
Rods

Special Shapes

Standard Fibre Co.

25 Miller Street, Somerville, Mass.

IMITATIONS OF
GANDY Cotton Duck BELTING

are constantly appearing upon the market and many of them very naturally get into the hands of users who believe they are getting The Gandy Belt. The experience of these purchasers is typified by the letter of one of them from Williamsport, Pa., who writes:

"I have used the Gandy Belt as a conveyor for years, with good results. To my sorrow and expense, I was once induced to purchase one of the 'just as good but cheaper' belts, with the result that the imitation lasted 108 days as against 487 days of service for the genuine Gandy."

There is but one Gandy Stitched Cotton Duck Belt, manufactured by the Gandy Belting Co. of Baltimore, and used with universal satisfaction for driving, elevating and conveying for over 36 years. To protect our customers we have adopted three distinguishing marks.

1. *The Red Belt with one edge painted green.*
2. *The Brand*—"THE GANDY BELT."
3. *The trade mark (shown in the picture at left).*

These three marks mean durability, permanent satisfaction, belt economy. Look for them; be sure you find them. Get "The GANDY Belt."

The Gandy Belting Co.

747 W. Pratt St., Baltimore, Md.

New York Office, 36 Warren St.

LOWELL TEXTILE SCHOOL

Scientific and practical training in all processes of textile manufacture including all commercial fibres. Complete three year diploma courses in Cotton Manufacturing, Wool Manufacturing, Textile Designing, Chemistry and Dyeing, Textile Engineering,

Degrees of B. T. E. (Bachelor of Textile Engineering) and B. T. D. (Bachelor of Textile Dyeing) offered for completion of prescribed four year courses.

Certified graduates of High Schools and Academies admitted without examination.

School opens Sept. 28, 1914

For Catalogue Address

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New Bedford Textile School

This school is located in New Bedford, Mass., a rapidly growing city and already the largest producer of fine cotton goods in this country.

Instruction given in the theory and art of cotton manufacture in all its branches.

The school has one hundred ten machines for instruction purposes in carding, spinning and weaving departments; seventy in knitting department, the most complete department of the kind in equipment and scope of instruction in this country; twenty-seven machines in machine shop; thoroughly equipped departments in chemistry and dyeing, in designing, and mechanics.

Every instructor a man of broad experience and training.

Fourteenth year. Many graduates filling positions of trust and responsibility. Catalogue sent free on application. Address,

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Bobbins
Spools
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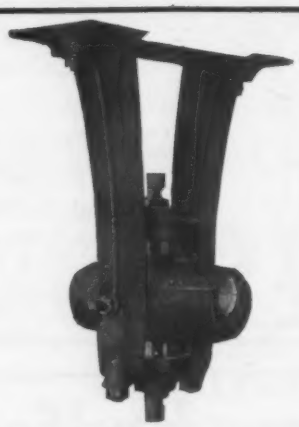

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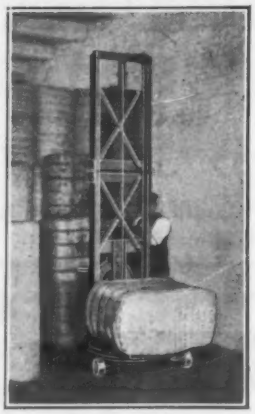

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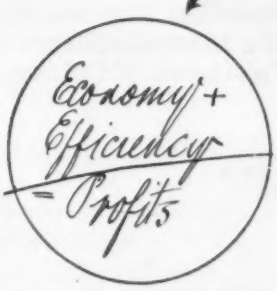

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TEXTILE WORLD RECORD

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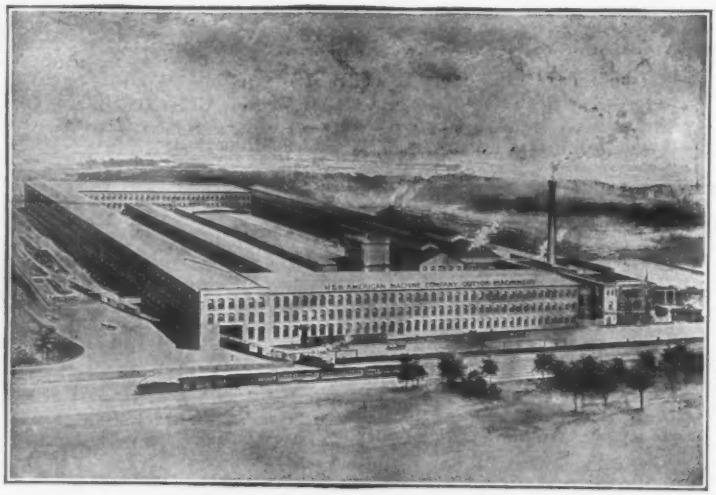

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TEXTILE WORLD RECORD

AUGUST, 1914

Monthly Comment.

The War Calamity

As this issue goes to press the world is confronted with the greatest crisis in modern times, probably more immediately concerning the welfare and prosperity of civilized nations than anything in history.

The possibility of a great European war has always been present, but as a contingency too remote for serious consideration of its effects. Now it is a reality and no one can tell what it may bring, beyond certain demoralization of international business and economic relations. The stock exchanges all over the world have closed to prevent widespread ruin. Commodity prices have fluctuated widely. Business men hesitate in doubt and from necessity. The American laboring population, composed so largely of foreigners, is in a state of excitement and unsettlement with the probability of their return to fight the battles of their native lands. Should they be ordered home and the means for getting across the ocean are available, it would leave American manufacturing industries crippled for lack of help and our great crops in danger from lack of hands to gather them.

It is impossible to foretell what the far-reaching consequences may be on this side of the water without attempting to forecast the bewildering possibilities in Europe. But with our own grave problems at home, we are certainly better off than the nations directly involved and much as we regret this world-wide calamity we are justified in feeling thankful that we are likely to suffer less from it than the European nations and indeed may temporarily gain some advantage. All of our bountiful crops that can be gathered and that we can spare will be needed to supply the millions of Europe whose farm hands are called from the harvest to the battle fields. The factory industries of Europe may be crippled and it would seem as if exports of textile fabrics to the United States would be checked, giving us our home markets again and the possibility of being called upon to supply, to the best of our ability, the foreign markets which are temporarily cut off from their usual foreign sources.

Should a general war ensue it seems impossible that it could be of long duration. The financial burden is too great for the world to bear and the conditions of modern warfare may prove too terrible for even the rulers of Europe to face with composure. The damage already done by the threat of war cannot easily be made good or the passions excited by the patriotic appeal to national pride and martial spirit easily be allayed even if peace was soon restored. Meantime our own domestic conditions are greatly disturbed in the face of this catastrophe which threatens the world.

Science and the Conditioning of Textiles

In a recent issue of the "Scientific American," Dr. E. E. Pickrell, government chemist in the appraiser's office at New York, contributes an article on "Science and the Tariff," in which he gives a detailed account of the process of conditioning as adopted at the New York Custom House for determining the average yarn number on which the tariff on cotton cloth is based. The article is clear and accurate, but is calculated to convey the impression that the United States Government is on the alert and abreast of the times in the application of science to the collection of duties on imports. For example, Dr. Pickrell begins with this:

> Due to extensive publicity of recent years, everyone realizes that the United States Government employs a scientific means to provide pure food and drugs to the consuming public. But few people are aware that science is a valuable assistant to "Uncle Sam" in the enforcement of the tariff laws in ascertaining the duties on imported merchandise, and that the application of every new tariff is more dependent on science.

Much as we would like to believe that the U. S. Government has been a devotee of science, the record of the Treasury Department in connection with the cotton tariff leaves no escape from the opposite conclusion. Drying out textile or other commercial products and adding a certain percentage to the dry weight as an allowance for moisture in order to bring the total weight to a standard agreed upon is a very simple operation, known as conditioning, which originated in France about the middle of the eighteenth century and has been carried on in use in the Lyons silk trade for about seventy-five years in essentially the same form as now employed at the New York custom house. It has been established in Europe for silk, cotton, wool and other materials for many years. In the sense that it is accurate and based on a knowledge of the properties of fibers, conditioning is scientific, but no more so than many other textile operations, such as the reeling of yarn, weighing and measuring of cloth or the construction and analysis of fabrics. All these operations, as well as conditioning, are scientific when done right, but to have the adoption of any of them at the New York custom house hailed as a noteworthy example of the application of modern science to customs administration is to convey a very misleading impression.

As a matter of fact, the U. S. Government has for years been away behind the times in this very matter of conditioning cotton goods for tariff purposes. Except for the eleven years from 1883 to 1894 the rates in every American tariff on cotton cloth have been adjusted to classifications based on the yards per pound or weight per yard, and consequently, as under the present law, have been subject to fluctuations with the weather when the weight per yard or yards per pound came near the dividing line. In spite of this fact, the U. S. Treasury Department has for the more than fifty-two years from March 2, 1861, to October 3, 1913, been levying duties on cotton cloths without any regard for the amount of moisture present. Duties have gone up and gone down, and the Treasury has allowed the Government and the importer in turn to be defrauded with the rise and fall of temperature and humidity.

If, instead of pointing with pride to the recent adoption of the familiar and century old process of conditioning, as proof of the Government's scientific tendencies, Dr. Pickrell would have rendered a real service if he had pointed out the strange official shortcomings in this respect and called attention to the need of scientific research work in connection with moisture in textiles. At the present time the arbitrary standards for moisture regain for textiles have been adopted by agreement in the European trade after more or less thorough investigation of weather conditions in Europe. The 8 1/2 per cent. standard for cotton regain and the 11 per cent. standard for silk are accepted in all countries and are therefore unchangeable. In the case of wool, however, there are marked variations in the moisture regain standards in different countries, and it is these variations that make it very important to have a scientific determination of the actual regain for textile fibers in the United States. At the present the only comprehensive data on the actual moisture regain of textiles in this country, are the tables com-

plied from the observations by W. D. Hartshorne at Lawrence, Mass. Mr. Hartshorne deserves great credit for the patience and care with which he carried on this research work under mill conditions. The results, however, were subject to the unavoidable errors of such an investigation under mill conditions, and, being confined to the actual variations of temperature and humidity, were limited in scope, making it necessary to force the values for wide space when compiling the tables.

What the textile trade needs today is an exhaustive series of tests of moisture regain for textiles at every possible combination of temperature and humidity in the range of weather variation throughout this country. It would of course be necessary to regulate the temperature and humidity by artificial means. This work should be done under conditions free from commercial influences and calculated to give the highest attainable degree of precision. The one institution on which duty naturally devolves is the National Bureau of Standards at Washington, whose functions as defined by law are defined in part as follows:

> That the functions of the bureau shall consist in . . . the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials, when such data are of great importance to scientific or manufacturing interests and are not to be obtained of sufficient accuracy elsewhere.

So far the Bureau of Standards has made no investigation of moisture regain for textiles that is at all commensurate with the importance of the question. It is now nearly eight years since we urged the Bureau to take up this work, but with the exception of a few tests last year of a number of samples at a certain temperature and humidity, there has been no report of anything done. How woefully inadequate those few tests were, is shown by the fact that on the strength of them the Treasury Department was misled into adopting on Oct. 30, 1913, a regain of 7 per cent. for cotton, only to be compelled a few months later to reverse its action and accept the world standard of 8 1/2 per cent.

The experience which the Bureau of Standards has had should convince its officials that the solution of these textile problems is a laborious and slow process, although not necessarily difficult, and that unless the work is done right, it is better not to do it at all. If it is done right, the resulting data would enable the regain for textiles at any point in the United States to be calculated from the observations of temperature and humidity by the Weather Bureau. Then Dr. Pickrell would be justified in pointing with pride to the scientific attainments of the United States Government in connection with moisture in textile materials.

Foreign Markets, Home Markets and the Department of Commerce

Last March the State Department instructed American consuls to investigate and report on the market for wool goods in the respective countries. In June the Department of Commerce, which had immediate charge of the inquiry, announced that reports and samples sent by the consuls would be placed on exhibition at a number of places throughout the country in accordance with the following schedule:

Boston—June 25 to July 9, Chamber of Commerce.
Lawrence, Mass.—July 10 to July 17, Board of Trade.
Lowell, Mass.—July 18 to July 24, Board of Trade.
Worcester, Mass.—July 27 to August 1, Chamber of Commerce.
Philadelphia—August 4 to August 15, Commercial Museum, 34th and Spruce Sts.
Passaic, N. J.—August 17 to August 22, Board of Trade.
New York—August 24 to August 29, branch office of the Bureau, 315 Custom House.
Chicago—September 1 to September 10, branch office of the Bureau, 629 Federal Building.

This traveling exhibit was extensively advertised by the press and the impression was conveyed that the Department of Commerce was vigorously promoting the sale of American wool goods in foreign markets in order to provide employment for American labor and capital under the new tariff. When the reports and samples reached Boston we examined the collection and found it to consist of consular reports from a number of countries, including Canada, India, Ceylon, China, Germany, Turkey, Persia,

Austria, Syria, Chile, the Argentine and the British West Indies, along with a miscellaneous collection of samples of wool fabrics from various countries. The German and some of the other reports are rather voluminous, and those who are familiar with consular reports will understand what they are when we say they are fair samples of the ordinary consular essays on commercial subjects, being a mass of second hand information which the consuls ordinarily gather in response to requests from the State Department. Even if American manufacturers and merchants had an opportunity to read these reports in printed form, their value as aids in getting foreign business would be insignificant. Nevertheless, the Department of Commerce places them on exhibition in eight different cities for periods varying from five to fourteen days and gravely announces that it is done in order to give American manufacturers information regarding the possibilities of increasing trade in American woolen and worsted fabrics.

The grotesque uselessness of the entire proceeding is even better illustrated by some of the reports themselves. Consul Benjamin F. Chase, Leghorn, Italy, begins his report and might as well have ended it with this:

> There is not much possibility of introducing American woolen and worsted fabrics into this Consular district to any great extent. The Italian production is becoming stronger and is affecting the introduction of such fabrics of foreign make.

Of like tenor is this extract from the report of Consul William J. Pike, Reichenberg, Bohemia:

> In the matter of a possible market for American made woolen and worsted fabrics in Northern Bohemia it is regrettable to have to state that said territory does not hold the slightest promise for the sale of such products. This district ranks as one of the oldest and most important in Europe, if not in the whole world, in the production of fine woolen and worsted fabrics. It not only generally supplies the local markets and Austria, but in the finer quality splendid markets are found in England, Germany, Turkey, Egypt, India, France and the Balkan States, to which countries immense quantities are exported.

There were few reports from our European consuls in the collection placed on exhibition by the Department of Commerce, but anyone acquainted with the woolen and worsted trade knows that the situation reported by the American consuls at Leghorn and Reichenberg prevails throughout Europe. An American firm might be able to sell a few cases of novelty goods in Europe and obtain compensation for their time and trouble in the form of the resulting advertising in the United States, but aside from this, the European market offers no outlet in the immediate future for any considerable quantity of American wool goods.

No less hopeless, although more grotesque, is the idea of selling wool goods in a number of other countries from which Secretary Redfield obtained reports. Here is one from American Consul A. J. McCornico, Trinidad, which will answer for the West Indies:

> Owing to the climatic conditions of Trinidad and Tobago and the customs of the larger part of the population, estimated at 350,000, most of whom make use of nothing but cotton materials for clothing, the trade in woolen and worsted fabrics is quite limited.

The report from Ceylon gives this alluring prospect of a market for American wool goods:

> Out of its 4,100,000 odd population, probably not more than 100,000 habitually wear any other clothing than a piece of cotton cloth around the waist, and a similar or perhaps a gaudier piece of similar material over the shoulders.

India has only five woolen mills operating 786 looms. The American consul, Henry D. Baker, reports that the production of these mills in the years 1912-13 was valued at $1,794,300. The imports of wool goods into India for the same period were valued at $10,200,000, which gives an annual consumption of $11,994,000 worth of woolen and worsted goods (exclusive of floor coverings) by the population of 300,000,000, or less than 4 cents' worth for each person. The principal woolen mill in India does a mail order business direct with the consumer, advertising that it will send samples and prices on application. When the request for a report was received the consul obtained the regular catalogue and collection of samples that the mill sends out to possible buyers at retail, and forwarded them to Washington. They were turned

over to the Department of Commerce and form a part of the exhibit which is now being sent from place to place in this country to show American woolen and worsted manufacturers how to obtain foreign orders and keep their mills in operation.

Consul Fisher, at Mukden, China, reported on the peculiar dress and the importance of having a well-known "chop":

> Notwithstanding the peculiar dress of the Chinese farmer and the other laboring classes in Manchuria, which form the largest part of the population, namely, cotton piece goods wadded for winter wear, there is a fairly large importation of woolen and worsted fabrics into Manchuria. The most important point in placing goods before the Chinese is to get an attractive "chop" and then strive to make it well known.

If the American woolen and worsted manufacturers are to get a share of the business of supplying army goods in China, the consul informs us it will be necessary to "have an energetic representative on the ground," and for this reason:

> The cloth for uniforms for the military powers is supposedly purchased by tender, but as many of the officers are interested in certain stores, much favoritism is reported to exist in these transactions. The volume of this particular trade and the quality of the goods are such that these contracts are of much importance to the manufacturers who cater to it. It can readily be seen that any manufacturer who wishes to participate in this trade must have an energetic representative on the ground.

A few reports were from South America and the following extract from the one by Consul General R. M. Bartleman, at Buenos Aires, Argentina, sums up the South American situation:

> Domestic production is confined to common and medium grades, the finer goods being all imported. There would be a ready market for this kind of American manufacture if they could compete in price with English goods.

The extracts we have given show the kind of material making up this traveling exhibit of the Department of Commerce. So far as it conveys any information, it confirms what was already well known, namely, that the foreign market for American wool goods is hardly worth talking about. There is no market for wool goods in tropical countries, while the markets outside of the tropics are being supplied from Europe where the wool manufacturing industry, developed from the earliest time, with its cheap labor makes any important competition by American mills the most chimerical of projects. The European woolen and worsted industry is centered in Yorkshire, and an excellent idea of foreign markets for wool goods is obtained from the following statement of British exports of wool fabrics for 1913:

Exported to	Value
Continent	$25,833,250
British Colonies	18,767,617
South America	9,745,551
Asia	6,696,688
United States	2,365,828
Mexico	347,900
All others	7,129,627
	$70,886,461

As a result of the radical revision of schedule K by the present administration, the imports of wool goods from all countries into the United States have already increased at the rate of $32,000,000 per year, equal to nearly half the entire wool goods export trade of the most important wool manufacturing country in the world. And yet in the face of this fact, the administration responsible for it invites American woolen and worsted manufacturers to sell their goods in foreign markets, many of which are protected against us, in competition with foreign mills whose products are now threatening the existence of our home industry in spite of the protection that still remains.

For possible markets for their wool goods the Department of Commerce refers American manufacturers to Europe, the center of the wool manufacturing industry where the products of cheap labor dominate the markets of the world; to South America, whose domestic mills are driving even the European manufacturers out of the home market for medium and low goods; to Ceylon, where only one person in forty wears more than a cotton girdle and shoulder cloth; to China, where the material for clothing is mainly cotton, where the chief factor in making a sale of wool goods to the general trade is a well-established "chop," and where the market for army goods can be obtained only by beating the Chinese at the game of bribery; and to India where the consumption of wool goods averages less than 4 cents a year for each person. Putting such evidence before

the American trade makes the Department of Commerce ridiculous under any circumstances. Taken in connection with the rapid increase of wool goods imports from Europe, the exhibit is little short of an affront to American manufacturers.

The essential features of the situation are plain as day: Foreign countries are now fully supplied with wool goods by foreign mills working under conditions that make any serious competition from American mills impossible. Regardless of isolated sales of a few cases or of the limited trade that may be developed in special lines, it remains true that foreign markets at present offer no important outlet for American wool goods.

The United States, with a population approaching 100,000,000 and a per capita consumption of $4.94 worth of wool goods, exclusive of carpets, offers the best wool goods market on earth.

As a result of a sudden and excessive reduction of the tariff, foreign mills are now supplying our home market with a greatly increased quantity of wool goods, which, if continued, as seems certain, will cause serious damage to our woolen and worsted industry.

These facts are so plain and show so clearly the course the United States Government should take that to point the way seems almost superfluous. Ordinary rules of reason appear, however, to be temporarily obscured at Washington, and it may, therefore, be worth while to state what "is so evident that it would glimmer through a blind man's eye," that at the earliest possible date the American woolen and worsted industry should be protected against foreign competition by a tariff that is both fair and adequate.

Short Time in Japanese Woolen Mills

A Japanese correspondent of the "Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie" gives a dark report of business in the woolen and worsted mills of Japan. He states that the market is burdened with an overproduction of wool dress goods. In order to improve conditions, the largest mills have entered into an agreement to reduce the production 30 per cent. from June 1st to November 30th. The four largest mills are the weaving mill at Osaka, operating 1,100 looms; the Tokyo Co., with 1,280 looms; the Toyo Co., with 760 looms; and the Jomo Co., with 1,000 looms. The first three mills will reduce their production 30 per cent. The Jomo Co. will shut down 10 per cent. of their 480 old looms and operate only 150 of their 520 new looms in the new mill at Gifu. The Japan Woolen Co., which operates 350 looms on dress goods, plans to shut down all but 100 looms. Each company has deposited $5,000 with a central committee in order to guarantee the payment of a penalty of 50 cents per day for each loom that is operated contrary to the agreement. The companies have also agreed to shut down their mills completely for four days in each month. It is provided that the mills can operate their looms on other fabrics besides dress goods if desired.

Jobbers' Brands

An interesting discussion of merchandising problems took place some days ago in New Bedford when Charles C. Parlin, chief of the research work of the Curtis Publishing Co., addressed a company of mill men and merchants. Mr. Parlin has been a close student of merchandising problems, not merely in an academic way, but as a close personal investigator of actual conditions and methods of merchandising from the manufacturer to the consumer. It is principally with the consumer in his relation to the retail and department store that his investigations have been most enlightening and it would not be inaccurate to state that he is usually more familiar with the conditions governing the movement of fabrics from the mill into the consumers' hands than the manufacturer himself.

Mr. Parlin believes that the consumer is becoming the dictator and the day is passing when he will take what the manufacturer believes he should take. The manufacturer and the selling organization must make and sell what the consumer wants. The importance of the jobber as a factor in distribution

has materially lessened. The recent Claflin failure was a striking example of that. The large jobber is being forced to become a manufacturing wholesaler, unless as in the Claflin case, he endeavors to control the retail establishments to whom he may sell his goods. When the jobber becomes a converter, adopts his own trade-marks and brands and establishes them by advertising to the retailer and consumer, he weakens the manufacturer's position by compelling him to sell on price competition with a constantly diminishing margin of profit. Every manufacturer is already painfully aware of what that means. The jobber controls the brand name under which the converted product is sold and can turn to any one of a dozen mills who will supply him with the grey goods at the lowest price. He is the one who reaps the full benefit from the satisfaction which the manufacturer's goods may give to the consumer. The mill has parted with its birth-right.

Mills should become their own converters in his opinion and where the product is not large enough to warrant this, several mills could group themselves together to furnish a sufficient supply for a converting plant. An example illustrating two different methods occurs to us. The Claflin Co. controlled a plant manufacturing sheets and pillowcases under a well known brand name. They bought the goods in the grey from various mills. Any one of these mills might run a large number of looms for this product one season and the next year not make a yard. The Naumkeag Mills is an example of a mill controlling its products. They have established and control a valuable trade mark for their "Pequot" sheets and pillowcases. They convert them themselves and through their advertising have a wide and steady market for their product, which as long as they keep it to the present high standard insures a regular output for this line year after year. Their trade mark is a valuable asset and they reap the benefit of the satisfaction which their goods gives to the consumer.

In the compilation of the directory of textile brands and trade marks now under way, we have been impressed with the vast number of jobbers' brands and trade marks. Every one of these means a loss of individual prestige which in most cases might belong to the manufacturer.

The Prevention of Fraud

Some months ago we asked the American consul general at Berlin to prepare a report on the German law against misrepresentation and fraud in the sale of goods. In response to this request we have received a carefully prepared report by the American Vice-Consul at Berlin, and of which an abstract appears in this issue. It shows that the method adopted in Germany to prevent deception and fraud is by statutes that reach traders in all classes of merchandise, rather than by laws like the "pure goods" bills now pending in Congress, which deal with the details of particular industries, such as textiles or boots and shoes. While the German law differs materially from the British Merchandise Marks Act, both are alike in this respect and have proved satisfactory in practice.

Foreign Trade in Textiles

The free trade Evening Post of New York makes this comment on British foreign trade and our new tariff:

> Despite the fact of which our stand-pat Republicans have "taken judicial knowledge," that English textiles have been flooding the American market, and that the only prosperity created by the new tariff was in the mills abroad, Lancashire reports a falling off in cotton goods exports of 20 per cent., with the mills to be shut down three weeks in order to prevent overproduction. All this falls in with the reports of American bankers and business men returning from Europe, that the depression over there has been rather worse than in the United States. It all merely shows, of course, what a thorough job of it President Wilson made. While bringing his own country into distress, he impartially hit England and made Germany and France groan.

The British exports of cotton piece goods of all kinds to all countries amounted to 498,504,900 yards in June, 1914, as compared with 617,557,600 yards in the same month last year, a decrease of nearly 20 per cent. The report from which these figures are taken gives the British exports of grey cotton piece goods by countries, and shows the stupidity of the comment which the Evening

Post makes in connection with the Underwood tariff.

The exports of grey cotton piece goods from the United Kingdom to all countries except the United States amounted to 158,130,900 yards in June, 1914, as compared with 204,318,800 yards in the same month last year, a decrease of 46,187,900 yards on 26 per cent. The British exports of grey cotton piece goods to the United States in June, 1914, amounted to 4,511,300 yards, as compared with 2,646,000 yards in the same month last year, an increase of 1,865,300 yards or 70 per cent.

As a result of the increase of exports of grey goods to the United States the loss of 26 per cent. for other countries was reduced to an average loss of 21 per cent. for all countries.

The shrinkage in the British exports of cotton goods to other countries than the United States is the most serious feature of the situation as affecting the American cotton manufacturing industry. So long as the trade in foreign countries was active the danger from the low duties of the Underwood tariff was warded off. With a slackening of trade abroad the efforts of foreign manufacturers to market their products in the United States will be correspondingly stimulated, and the danger of dumping on our market proportionately increased. And what a magnificent market ours is! Five years ago the U. S. Census Department reported the value of the annual products of our cotton mills at $630,615,909, giving employment to 378,880 wage earners. At the rate of increase between 1905 and 1909, the present annual production of cotton goods in America would amount to $868,898,904, giving employment to 528,158 wage earners. This is the market that the low rates of the Underwood tariff has exposed to dangerous foreign competition, for we have consumed slightly more cotton goods than we have produced. How great the danger to our home industries is may be realized from the fact that the total exports of cotton goods from Great Britain in 1913 were valued at $623,313,418, practically all to other countries than the United States. A shrinkage in this trade can be readily made up by dumping on the American market.

Six Months' Business With the Bradford District

The following table gives the United States consul returns of exports from the Bradford district to the United States. These figures would cover the bulk of the woolen goods exports from England. The figures tell their own story. A new item in the returns for the first six months of 1914 is wool tops, amounting to $650,000. There were no wool tops exported under the former tariff.

	Jan.-June	
	1914	1913
Wool	$6,393,990	$1,702,870
Mohair and alpaca	145,740	146,545
Sheep skins	153,835	91,695
Wool noils and waste	417,220	68,820
Wool tops	650,035	...
Worsted and mohair yarn	999,715	76,103
Wool and mohair fabrics	4,691,175	968,735
Carpets	100,735	42,390
Cotton yarn	208,500	138,355
Cotton cloth	1,822,230	878,100
Silk noils and waste	201,540	127,840
Silk yarns	455,630	349,945
Silk fabrics	46,190	9,115
Machinery	163,815	147,520

Wool Clothing in China

Since the revolution in China there have been frequent reports that the Chinese not only had changed the form of their government, but were rapidly discarding their old style of dress and adopting Western fashions. It was stated that as a result the consumption of wool goods had increased materially in China and that a promising market for foreign wool goods had developed. In order to get reliable information on this question we asked the American consuls in China a few months ago to investigate and report on the matter. Their replies are given below:

F. D. CHESHIRE
American Consul, Canton, China

American Consul, Canton, China

On my return from the United States on leave, I found your letter of March 2, 1914, awaiting a reply. You state that you have been hearing at intervals during the past year and a half that there were great possibilities of developing the

exports of woolen goods to China owing to the change that is going on in this country as regards dress and manner of living.

It is true that a great many Chinese, since the inauguration of the new form of government have disposed of their queues, and many have adopted the foreign dress, but the climate of Canton, being semi-tropical, I am afraid there is not a very extensive market for the export of woolen goods to this port. I have no doubt you will find a better market for woolen goods in the north of China than you would in the south of China.

This reply I am sending through the State Department with the request that it be forwarded to your address.

I shall always be glad to render you any assistance I possibly can in the way of furnishing you any information, etc., regarding the export of goods from America to my consular jurisdiction.

W. S. MYERS
American Consul, Swatow, China

With reference to your letter of March 2nd, last, stating that you have heard that, due to changes now taking place in the dress and manner of living of the Chinese, there are great possibilities of developing the exportation of woolen goods to China and suggesting that this office investigate the matter, I have to state that this question has been the subject of inquiry by this office and has been touched upon in the annual trade report for 1913. It has been found that the importations of woolens suitable for suitings in 1913 decreased by about half as against the previous year, and now are on a level with importations before the revolution. The facts of the case are, so far as this consular district is concerned, that immediately after the revolution many Chinese, including the students, took to wearing foreign style dress, but this craze scarcely lasted to the end of 1912, and now it may be said that, generally speaking, every one has returned to the use of the native garb. This craze for foreign style dress increased the import of woolens in 1912 and occasioned the report to which you refer.

There is every indication that the native dress will be retained, in which case woolen goods will never feature seriously as a material for clothing.

There is a small demand here for light weight woolen sweaters and underwear which can be marketed cheaply.

LESTER MAYNARD
American Consul, Amoy, China

Replying to your letter of March 2, 1914, I beg to submit herewith the statistics of imports of woolen and cotton mixtures, and also of woolen goods for the year 1913:

Goods	Quantity	Value
Alpacas, Lusters and Orleans ..yds.	63	$14
Union and Poncho Cloth .....yds.	31,761	15,543
Union Italian Cloth .....pieces	176	1,426
Woolen and Cotton Flannel ...yds.	1,200	258
Woolen and cotton Mixtures, Unclassed .....yds.	25,108	8,268
Total: Woolen and Cotton Mixtures..		$25,509
Goods	Quantity	Value
Blankets and Rugs .....lbs.	21,200	$8,174
Camlets, English .....pieces	3,644	28,035
Cloth, Broad, Medium, Habit, and Russian .....yds.	655	718
Flannel .....yds.	26	22
Lastings .....pieces	272	2,440
Long Ells .....pieces	720	3,289
Spanish Stripes .....yds.	4,571	2,271
Woolen Goods, Unclassed .....yds.	4,955	2,960
Woolen and Worsted Yarn and Cord .....tons	.8	10,328
Total: Woolen Goods		$58,237

The former you will note totals $25,509 as against $38,905 for the previous year. The total for woolen goods $58,237 is a slight increase over 1912, which amounted to $54,110. This would indicate that the demand for and use of woolen goods in this district has not increased.

There are no large dealers in Amoy and most of the supplies are drawn from Hongkong, and American manufacturers who desire to sell woolen goods to this district will find it advantageous to form selling arrangements through Hongkong.

JOHN FOWLER
American Consul, Foochow, China

In reply to your letter of March 2, regarding the exportation of woolen goods to this country, I beg to say that, though a few of the Chinese have adopted the foreign style of dress, the great majority still dress the old way and do not use woolen fabrics. This being a semi-tropical country the demand will not be so large as that of the country north of here.

The comparatively small quantity of woolen goods that is imported here is done through local Chinese tailors, who buy in Shanghai or Hongkong, and this is mostly British make.

GEORGE F. BICKFORD
American Consul, Newchwang, China

American Consul, Newchwang, China

After the Revolution in 1911, many natives, with the influx of western ideas, changed to foreign dress, and a considerable increase in the demand for imported woolen goods resulted. Hopes for a permanency and further increase in this demand induced various importers to bring in large stocks, which were not, however, for the most part of the highest grade.

The Chinese who had adopted western dress soon realized from experience that clothes of foreign style were not as warm or as comfortable as their native clothes, with the thick padding and fur lining for winter wear, and their loose, airy garments for summer use. This is especially true of North China and Manchuria where the winters are severe. There has, therefore, been a reversion to native clothing on the part of most of those who changed to foreign dress after the Revolution, foreign garments being reserved chiefly by the officials, for wear on special occasions.

Another cause of the decrease in the market for woolen goods, and, in fact, an important element in the general trade depression is the existing financial stringency.

I have reliable information to the effect that there are now practically two years' stocks of woolen goods on importers' and merchants' hands in Newchwang, and that attempts at present on

the part of manufacturers and exporters abroad to extend their business here will prove futile. It is said that the usual sending, as is the trade custom, of samples is now practically useless. This condition will of course exist until the stocks on hand at the present time are disposed of, this disposal being restricted by the conditions above given.

THOMAS SAMMONS
American Consul, Shanghai, China

American Consul, Shanghai, China

Your letter of March 2, 1914, on the above subject, has received careful consideration and attention.

While there was an increased demand for woolen goods in China, following the revolution of 1911, it now appears that the importations were in excess of the requirements and that stocks on hand are quite large and, to some extent, practically unsalable.

Many of the Chinese who adopted foreign dress, or the use of woolen goods for their clothing, during or following the revolution, have gone back to the old styles, which are generally considered more comfortable. Because of these considerations, the Americans who are concerned in the handling of woolen goods in Shanghai do not hold out any encouragement regarding the future extensive development of business in this line.

I am reliably informed that, on account of the heavy stocks of woolen goods now held in Shanghai, and the falling off of trade activity generally, purchases may be made at ruinous discounts in woolen fabrics, in some instances at a reduction of fifty per cent. of the original cost. This condition, however, is not normal and will not continue when trade activity is restored.

The importation of woolen and woolen and cotton mixtures during 1913 showed a considerable falling off as compared with 1912. At the same time, there was an increase in the importation of woolen yarn and Berlin wool at the port of Shanghai.

SAMUEL S. KNABENSHUE
American Consul, Tientsin, China

Replying to your letter enquiring with regard to the possibilities of developing exports of woolen goods to China owing to the recent changes that have taken place as regards dress and manner of living, I have to inform you that, in obedience to instructions from the Department of State, this office has made an investigation of the woolen and worsted trade in this district, and a report on same was forwarded some time since. The result of this investigation would seem to show that the Chinese people, at least in the North, have not adopted the European style of clothing in sufficient numbers to make a marked increase in the importations of woolen and worsted fabrics into the country.

When the revolution occurred two years ago, it was thought by many of the importers that a great change would take place in the dress of the people. But the result has been that while the majority of the better class have cut off their queues, and while great numbers have adopted foreign hats, shoes, socks, and underwear, only a few have discarded their native dress for European style clothing. The reasons for this are that Chinese clothing is much better adapted to their life than European. They have little or no heat in their houses in winter time, and wear a number of long coats, one over the other, with long sleeves coming several inches below the hand, and these are able to keep them warm in the coldest weather. These coats are fur lined for the better class, and padded with raw cotton, or lined with sheepskins for the poorer. Numbers of Chinese who at first adopted foreign style clothing, returned to their native dress in the winter time as they found it much warmer.

At present the principal trade in woolen goods in the Tientsin market is in army cloths to supply the Chinese army and police force.

EDWIN L. NEVILLE
American Consul, Antung, China

I have your letter of Mar. 2, 1914, inquiring as to the spread of European style clothes among the Chinese, with especial reference to the possibility thereby opened for the increased sale of woolen goods.

The movement you speak of is unquestionably growing. All Chinese officials wear frock coats and evening dress on formal occasions. It is also customary for merchants and other business men to keep "foreign" clothes in reserve. It is now possible to find tailors in any city of importance anywhere in China, I am told, and the local Chinese tailors are authority for the statement that their business has doubled in the past two years. Certainly the number of tailors has greatly increased of late years.

The imports of all woolen goods at Antung for 1911, 1912 and 1913, amounted to $22,398, $23,902 and $24,923, respectively. Imports of woolen cloth for 1911, 1912 and 1913 were $2,529, $1,482 and $7,879 respectively.

Spinning Tests of Upland Long Staple Cotton

At the spring meeting of the American Cotton Manufacturers' Association, held in New York, Dr. N. A. Cobb discussed at some length the spinning tests that were being conducted by the United States Department of Agriculture and which were believed to show some important results, in some respects contrary to the generally accepted beliefs of manufacturers concerning the true character and value of certain grades of Upland cotton. The Department is endeavoring to determine as accurately as possible how new strains of Upland cotton compare in spinning value with the Delta cottons. The general result seems to indicate that certain of these new strains show less waste in spinning than the average Delta cotton, although the yarn spun from them is not so strong. Full descriptions of

these tests with tables are presented in Bulletin No. 121, recently issued by the Department of Agriculture and spinners should be interested in the results of these tests, which may be obtained without charge on application to the Department.

The Wool Growing Industry in South Africa

BY AFRICANUS

Pretoria, S. A., March 31, 1914.

Sheep breeding in South Africa may be said to have started when the Dutch East India Company established a port at Cape Town for the revictualling of their ships on their way East. In 1691 the colony at Cape of Good Hope numbered over a thousand persons and possessed nearly 50,000 sheep, most of which had been obtained by barter from the Bushmen. An early traveler describes the original Afrikander sheep as long-legged, small in the body and thin in the forequarter and across the ribs:

> There is a little internal or external fat, but it is all collected on the rump and on the tail. The tail itself is short, broad, flat and naked on the underside, weighing from six to twelve pounds. The fat is of a semi-fluid nature or rather having the consistence of a thick oil and is frequently used as a substitute for it and for butter.

Some were black, some brown and others bay, but the greatest number were spotted; their necks were small and extended and their ears long and pendulous. That this description was a fairly accurate one, the reader will be able to judge for himself by looking at the illustrations given of typical Afrikander sheep.

AN AFRICANDER WEATHER

The wool may more properly be described as a strong, frizzled hair of which practically no use is made except for stuffing cushions and mattresses. As a matter of fact, even today the farmer who keeps Afrikander sheep does not shear them unless for some very special purpose, as the value of the fleece does not warrant the cost of shearing. The writer recently had a number of Afrikander sheep shorn and the wool manufac-

tured locally. The particular lot of wool was valued by the manufacturer at 2 1/2d. (5 cents) per pound.

Dr. Mann described the Natal sheep of his time as follows:

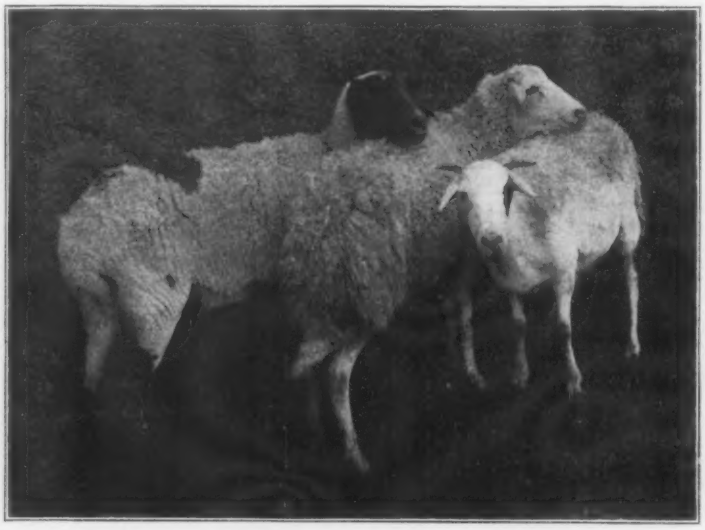
> The sheep is a curious, ugly animal with a large quantity of rough, wiry, dark-brown hair among the wool . . . weighs about fifty or sixty pounds, affords excellent mutton and has a fat tail.

He observed a defect in the wool of the improved variety saying:

> The wool grown in the Dutch Provinces beyond the Drakensberg has generally a weak place in the middle of each fiber, where it breaks when subjected to strain. This, in all probability, is due to there being a season on those upland plains, where the pasture yields insufficient food for the due maturation of the fiber.

among the farmers and crossed with the native hairy breed, and on the death of Colonel Gordon in 1793, the balance of the flock was disposed of by sale and taken to Australia by Captain Waterhouse. In all probability these sheep formed the foundation of the Australian flocks of today, for a number of the rams were purchased by Captain McArthur, the well-known Australian pioneer.

Youatt, in his book on sheep, states that when the value of the merino wool began to be acknowledged a few of the Spanish sheep were sent to the Dutch colony at the Cape of Good Hope; but the native sheep seemed, from the nature of its covering, to be so plainly adapted to the situation in which it



THREE AFRICANDER SHEEP

In 1724, the Batavian Government sent some fine woolen rams to the Cape, but it is stated that the jealousy of the Chambers of Holland, which controlled the colonists, soon induced them officially to direct the discontinuance of experiments and an order to that effect was put in force in 1736.

In 1785, the Dutch East India Company made a fresh start by sending out a number of merino sheep to Colonel Gordon, the Commander at the Cape. These were of the Escurial breed and had been presented to the Government of Holland by the King of Spain. A portion of them was distributed

was placed; and the prejudice was so strong and so universal that it would be useless to attempt to preserve the fineness of the merino wool in the torrid clime of Southern Africa; and, perhaps the prevailing motive, the use of the fat obtained from the tail of the Cape sheep was so various and so identified with the likings and habits of the colonists that few of the Dutch farmers could be induced to give the newcomers even the shadow of a trial. The experiments that were made were confined to the Government farms and a few others in their immediate vicinity. The early experiments failed,

but the stock remained in the country and it was not long before the value of the merino wool was recognized and the grading-up of the local flocks was undertaken.

A few of the rams sent to Colonel Gordon had been preserved from exportation to Australia by the Van Reenen family, who commenced converting the Cape sheep into fine-wooled animals. Governor Jansens in 1803 strongly aided the new movement, forming a society with that object. He crossed sheep with some he bought of the Van Reenens and urged his Cape subjects to adopt the new method. He went further and relieved the better wool from all imposts.

In 1812 J. F. Reitz and Michael van Breda imported some fine-wooled Saxony sheep. These were located in the District of Bredasdorp and the breed was kept pure, though some of the rams were used for cross-breeding with the native sheep. To use Mr. van Breda's own words, written in 1823:

> In 1817 I bought, in partnership, a lone place in the district of Swellendam, north bank of Agulhas. A common farmhouse, an outhouse, a small stable and a kraal were the only buildings on it. We purchased a thousand native sheep of a breed produced about thirty years ago from Cape ewes and Spanish rams. Among these were twenty-five rams to which we subsequently added three rams and three ewes bred at Groote Post from real Merino sheep. The first year we had 1,200 lbs. of clean wool and in 1822, 4,000 lbs.

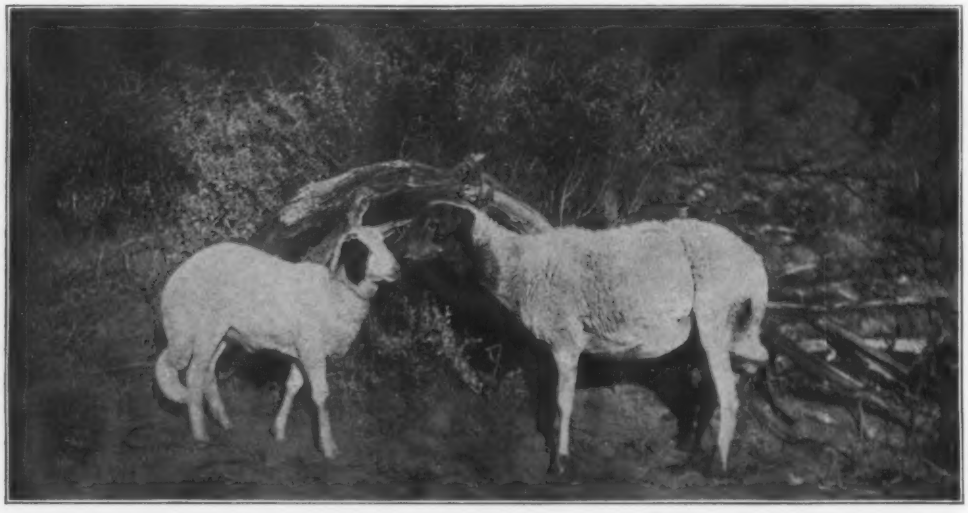
Lord Charles Somserset, one of the Colonial Governors under the British Administration, imported Merinos bred by Sturgeon (who had purchased the remnant of King George's flock, when the attempt to acclimatize merinos in England failed) and kept them at the Government farm at Groote Post. Rams were also obtained for Groote Post from Lord Western's English flock of Spanish merinos. Numerous experiments were indulged in by the farmers and most of the English breeds have at one time or another been used in attempts to put wool on the native sheep. One of the favorite practices was to cross the native ewes with wooled Persian rams.

STUDENTS IN WOOL CLASSING

The British settlers of 1820 did their best to improve the Cape native sheep, but the immediate neighborhood of Algoa Bay (Port Elizabeth), the site of their early location, was not a happy one; as one wrote at the time:

> The flocks were either depastured on lands unfitted for them or were not properly tended, and they ultimately dwindled away.

A large number of well-bred fine-wooled sheep were brought to the country by English settlers located in the Albany district, and these were more successful. A new effort, in 1827, still further inland, was successful and laid the foundation of the pastoral prosperity of the Eastern Province of the Cape.



AN AFRICANDER EWE TWO YEARS OLD WITH LAMB TWO MONTHS OLD

The more progressive breeders have come to the conclusion that the method of building up the industry by cross-breeding is too slow and uncertain to be of any value and their flocks have been founded on imported stock purchased chiefly in Australia and Tasmania, though considerable numbers of Saxony and Rambouillet and a few Vermont sheep have been obtained. Today there are in the Union of South Africa 28,025,562 wooled sheep and 7,253,925 of the hairy and bastard sorts.

A certain amount of progress was made before the union of the South African Colonies in 1910, but the improvement since that date has been even more marked. In 1911, a special branch of the Department of Agriculture was established to deal with scab in sheep and goats and to advise farmers regarding the best methods of farming and management. Sheep and wool experts were obtained from Australia, and one or two South Africans who had studied in Australia were engaged, and the effect of the work of these officials is rapidly becoming noticeable.

Scab is one of the greatest curses the South African sheep farmer has to contend against, no less than £120,000 ($600,000) being spent annually in the attempt to overcome it, while the indirect loss caused to the country by the ravages of the disease must run into millions of pounds. The scab campaign is progressing slowly, as is evidenced by the following figures for the percentage of scab-infested stock on December 31:

	31st December		
Province	1911	1912	1913
Transvaal	3.50	2.05	0.74
Cape	3.37	3.65	1.83
Orange Free State	3.84	3.46	1.46
Natal	..	1.58	1.60

South Africa is a country that possesses

no clearly defined areas suitable for sheep farming, but in almost every district of the Union there are a number of farms admirably adapted to the production of wool. Two of the difficulties that have to be faced are lack of a proper water supply and of shade trees for shelter. Irrigation which is being proceeded with under Government supervision will remove the first, and the remedy for the second lies in the farmers' own hands, for there are few spots in the country where trees will not thrive.

South African wool is valued for its peculiar softness and good color and is used largely for blending with Australian wools. Its chief fault is the excessive waste in scouring. This heavy wastage is due to several causes:

(a) To extreme fattiness, largely due to Vermont and similar breeds that have been used to excess in some districts.
(b) To the large amount of earth found in wools from certain districts. Too often the sheep are driven long distances for water, with the result that the journey to add from the watering place opens the fleece and allows the dust to enter.
(c) To the fact that shearing is frequently done in the rainy season at times when the fleeces are not dry.
(d) To shearing on sandy or dirty floors of sheep kraals.

All of these matters are, however, receiving the attention of the Government experts and those farmers who have experienced the good prices to be realized by avoiding excessive yolk in the fleece and preparing the wool in a proper manner, are not only attending to their own business, but they are helping the other fellow.

Some years ago a stud sheep farm was established by the Government in the Ermelo District of the Transvaal Province, where high grade flocks are kept for the propagation of merino rams for sale to farmers. A limited number of students is received on the farm and taught modern methods by a qualified staff. The course usually extends over two years. In addition small flocks of wooled sheep are kept at the Government farms and schools in other districts, which are devoted to teaching practical agriculture in all its branches.

A good idea of the progress that has been made in the wool growing industry of South Africa is obtained from the following table of exports:

Pretoria, S. O., March 31, 1914

Year	Wool	Mohair
1908	104,252,696	18,186,166
1909	130,973,389	19,649,053
1910	121,668,028	17,817,219
1911	132,207,029	21,066,825
1912	161,974,684	23,479,729
1913	176,971,865	17,355,882

THE GERMAN LAW AGAINST UNFAIR COMPETITION

Abstract of a Report by DeWitt C. Poole, Jr., American Vice-Consul General, Berlin, Germany

Inquiry is made relative to laws in Germany for preventing misrepresentation and fraud in the sale of goods. The German law for the protection of trademarks, the law of copyright and the patent law, as well as the several paragraphs of the penal, civil and other codes applicable to cases arising under this broad heading, have their counterparts in America; but for the most specific and frequently used instrumentality in this department of German jurisprudence, namely, the law against unfair competition, there is no close analogy, although certain kinds of unfair competition are actionable under the common law. For American business circles, therefore, this statute is of particular interest. The present report deals with its provisions and the campaign which is constantly being carried on thereunder, not only for the suppression of misrepresentation and fraud in sales, but of unfair business methods in general.

This present statute consists of 30 sections. A translation is appended (annex 1). Like its precursor, the law is limited in general to the regulation of acts done for purposes of competition, and it does not extend in its operation beyond the world of business, although this term is conceived in its widest sense.

Section 1 lays down the general principle that whoever in the course of business and for purposes of competition performs acts which contravene good morals, may be enjoined therefrom and held liable in damages. A limited number of acts have, however,

been declared by various courts to be in violation of section 1.

A decision was obtained against a merchant who distributed by way of advertisement facsimiles of a letter from one of his customers in which the wares of a competitor were disparaged; also against a merchant who refused to sell an article displayed in his show window at an especially low price because he had no duplicate in stock.

The other substantive sections of the law are specific and relate to the following subjects: misrepresentation in advertising; the holding of closing-out and other special sales; the use of standard retail measures in certain lines; the bribery of employes; untruthful disparagement of competitors; misleading use of names and designations; the betrayal of trade secrets.

Misrepresentation in advertising is dealt with in sections 3 and 4. Section 3 provides that whoever in public announcements or communications makes false representations as to matters of business, especially as to the character or origin of merchandise, the possession by it of distinctive marks, the purpose of its sales or the abundance of the supply, so as to call forth the appearance of an especially advantageous offer, may be enjoined therefrom. Section 4 provides that whoever makes such statements knowingly may be punished with imprisonment up to one year, a fine up to M. 5,000 ($1,190) or both. These two sections afford the basis for the greater number of civil and criminal actions arising under the law. Their interpretation and enforcement have been strict. Such expressions as "cheaper and better than in other stores," "the best and cheapest place to buy," "Sold at factory prices," "No middle man," etc., are inadmissible unless true. A court in Nuremberg enjoined a tailor from advertising his establishment as "first class," on the ground that he paid his workers in accordance with the fourth class in the scale of wages established by the local tailors' guild. A court in Aschaffenburg forbade a shoe dealer to style his establishment "Welthaus" (World House) because the designation tended to create the impression that the house had a considerable number of branches elsewhere, especially abroad, whereas, as a matter of fact, its only connection with foreign countries lay in the circumstance that some of its goods were imported. Numerous decisions have held that advertisements which, by equivocal wording or the emphasis of certain words or phrases and the suppression of others, through the use of large and small type, create prima facie impressions which are misleading, are inadmissable.

Sections 6 to 10 establish police supervision over closing-out and other special sales in the retail trade. Section 6 forbids all reference to bankruptcy in advertisements of sales of goods taken from a bankrupt stock but no longer forming a part thereof in a legal sense. The practical result of this prohibition has been to eliminate the mention of bankruptcy in the advertisements of any sales except those conducted by the sheriff.

Section 7 stipulates that an advertisement of a closing-out sale must state the occasion thereof and empowers the administrative authorities, following consultation with the local chamber of commerce and similar trade bodies, to require in the case of sales of a specified character that statements be filed in advance setting forth the occasion for the sale and the time of its beginning and listing in full the goods to be sold.

The Berlin police have issued regulations in accordance with sections 7, 9 and 10. A translation is appended as annex 2. As may be seen from an examination of this, all closing-out sales must be notified to the police at least four days in advance of their advertisement. The occasion for the sale must be stated and an exact list of the goods to be sold filed for the inspection of all persons interested.

Section 11, which empowers the federal council to specify the units in which certain goods may be sold in the retail trade, is aimed to prevent the offering of unusual, and of course smaller, units which might be accepted by an unsuspecting public as the measure commonly associated with the class of goods in question, although no positive falsification or deception would be provable.

"Concealment in the matter of quantity is to be looked for," says the ministerial report which accompanied the draft of the law as presented to parliament, "only in the case of ultimate consumers, who are not accustomed or are not in a position to control the quantity of the merchandise received." The federal council has issued special regulations under authority of this section as to the retail units for the trade in yarns and candles. There has been agitation from time to time for similar orders governing the trade in coal, lignite, preserved foods, beer in bottles and pitchers and preparations of cereals. It is complained with reference to the last named that in the case of the American product, Quaker oats, the German buyer often accepts a so-called pound package under the impression that it contains the German pound of 500 grams instead of the American pound of 454 grams, as is actually the case.

Section 12 provides for the punishment by fine or imprisonment or both, first, of persons who bribe the employes or agents of others for competitive purposes and, second, employes or agents who accept or endeavor to secure such bribes. Five criminal convictions were obtained under this section in 1912.

Sections 14 and 15 are aimed to suppress by civil and criminal action respectively the circulation by competitors of damaging and untrue allegations with reference to each other.

Whoever, section 16 provides, uses a name or a special designation of a business or a publication in a manner tending to produce confusion with the name or special designation rightly employed by another may be enjoined therefrom; and if he knew or must have known that his use of the name or designation would tend to produce confusion, may be held liable in damages to the person injured.

The protection of business secrets is dealt with in sections 17 to 20, which provide (paragraph 1 of section 17) that one who as an employe, laborer or apprentice discloses to others without authority and for the purpose of competition or with a view to harming his employer, business secrets which have been entrusted to him as a result of the circumstances of his employment, (or section 18) gives to others or himself uses without authority and for purposes of competition plans, models, patterns, recipes, etc., of a technical nature which have been entrusted to him in the course of business shall be punished by imprisonment for one year, a fine of M. 5,000 ($1,190) or both. Paragraph 2 of section 17 applies the same penalties to one who without authority and for the purposes of competition himself uses or communicates to others business secrets which have come to him through disclosures of the kind defined in paragraph 1 or through action on his own part in contravention of law and good morals. Section 19 adds to the criminal liability thus created action for damages, and section 20 punishes with 9 months' imprisonment, M. 200 ($476) fine or both, one who prompts another to violation of these sections. When the law of 1896 was under discussion an effort was made to have the obligation of secrecy extended for a period first of five, and later of two, years after the termination of employment. The project was rejected and no effort was made to renew it in the legislation of 1909. In 1912, forty-five criminal convictions were obtained under these sections. Cases arise most frequently in the embroidery and lace industries, where patterns are given out to home workers, in the paint and color industry and in the chemical branches.

The rights created by the foregoing sections as to injunction and damages are limited in their duration (section 21) to six months from the time at which the person to whom the rights accrue obtains knowledge of the act and of the person to be charged with the liability, and irrespective of this knowledge to three years from the time of the doing of the act.

As to the particular provisions of the law, there is some objection to the sections relating to misrepresentation in advertising and to closing-out and other special sales, on the ground of the difficulties arising from a lack of uniformity in the interpretation given

them by various courts. It is thought, however, that time will remedy this. The section relating to bribery of employes is said in some quarters to have proved inefficacious. There is an association which concerns itself solely with the enforcement of this section. Nevertheless, bribery, especially of buyers is said to be very prevalent. The recent failure of a large department store in Berlin is attributed principally to corruption of this kind. There is some agitation for an extension of the law in the direction of a prohibition of premiums given with purchases after the American "trading-stamp" system.

The Handelsvertragsverein, an important organization engaged especially with matters relating to foreign trade, has presented a petition to the imperial chancellor in the course of the past month asking for an amendment of sections 3, 4 and 5 so as to more strictly control the use of geographical designations in the trade names of merchandise. The first paragraph of section 5 now stipulates that the use of names which serve in business to designate certain merchandise without purporting to indicate its origin is not in violation of sections 3 and 4. Some such exemption, the Handelsvertragsverein argues, is unavoidable, for certain trade names have completely lost their geographical significance, as, for example, Frankforter sausages, Tilsiter cheese, cheviot, ulster, etc., still the lines could be more closely drawn and to this end the Verein suggests that the exemption be made to apply only to names "which have come to serve in business intercourse exclusively as designation of quality and can no longer be conceived by consumers to indicate origin."

On the whole, however, the statute is regarded as satisfactory and sufficient. Its critics join with its advocates in affirming that the general level of morality in business has been perceptibly elevated since its enactment. Critics of the law argue that this might have been effected without legislation, and they look with approval upon the present efforts of the business community to suppress unfair competition by extra-legal means, such as the offices of arbitration (Einigungsaemter) and the conciliatory and corrective activities of merchants' associations described above. It is believed by all parties that future development will be most markedly in this direction and that, as time goes on, there will be less and less occasion to invoke the law directly. The decrease which occurred in 1912 in the number of complaints lodged by the state's attorneys is accepted as an early indication of this trend.

WOVEN BELTING

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record

The first tests in manufacturing belting from yarn consisted in making a single cloth and then sewing several thicknesses together. The materials generally used were

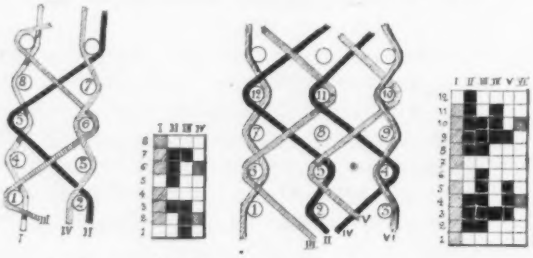


FIG. 1 FIG. 2 FIG. 3 FIG. 4

hemp, linen, cotton, camel hair and ramie. The ply fabric after being sewed is impregnated with preparations to retain humidity and finally coated with a composition having rubber or gutta percha as a base. A cotton belting made in this way has a resistance of 5,800 pounds per square inch of sectional area and stretches 12 per cent. under a load of 3,800 pounds per square inch of sectional area.

This class of belting possessed a number of defects, and as a result of construction, has been greatly improved by employing woven ply fabrics from which belting is made in a wide range of widths and thicknesses. Two or more fabrics are woven and then stitched by warp threads.

Fig. 1 is a section of a 2-ply belting showing the method in which the threads are interlaced. The circles represent the ends

of the filling; the undulating lines are the warp threads. Fig. 2 is the weave for this fabric, the weave pattern covering 4 warp and 8 filling threads. This belting has the appearance of a coarse cotton cloth and is woven with two harness, one carrying the

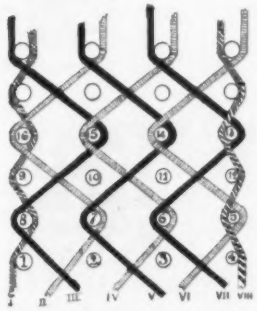


FIG. 5

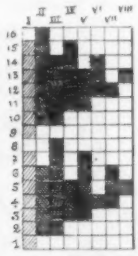


FIG. 6

ground threads, I and IV, the other the stitching threads, II and III.

Fig. 3 is a section of a 3-ply belting, the weave for which is shown at Fig. 4. There are two threads, I and VI, used for the ground work and the other four threads for the stitching, none of the ground threads being used for the center fabric. The filling

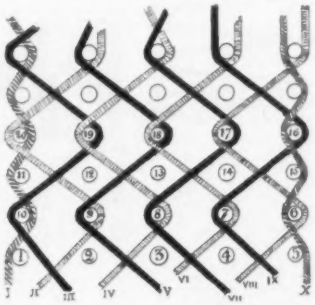


FIG. 7

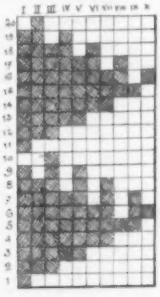


FIG. 8

is interlaced in the first and second fabrics, then the second and third, the shuttle passing a second time in the third fabric, then in the second and finally in the first fabric. This method gives a very neat selvage. Fig. 5 shows a section of a 4-ply belting, the weave being shown at Fig. 6. The ground threads, I and VIII, are used only for the outside fabrics, giving the belting the appearance of a plain cotton cloth.

Fig. 7 shows a section of a 5-ply belting, the weave being shown at Fig. 8. Fig. 9 shows a section of a 6-ply belting, for which the weave is shown at Fig. 10. The same principles of construction are employed for both warp and filling.

All of the weaves so far given are used for the same kind of a fabric, but of different thicknesses. It is evident that by employing the same methods weaves can be drafted for 7, 8 or more ply belting. Ordinarily, how-

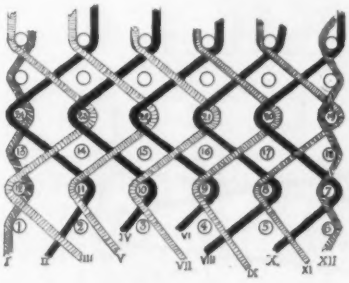


FIG. 9

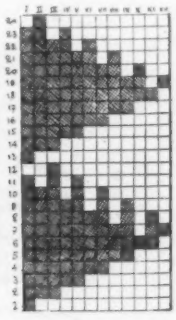


FIG. 10

ever, belting is seldom made more than 6-ply. The looms used for weaving belting must be very strong and solid, otherwise they present no peculiarities. After weaving and before impregnation, the belting is stretched by a machine similar to that used for stretching leather belting.

All of the weaves so far illustrated can be reinforced by a stuffing thread. Fig. 11 shows the application of this principle to the

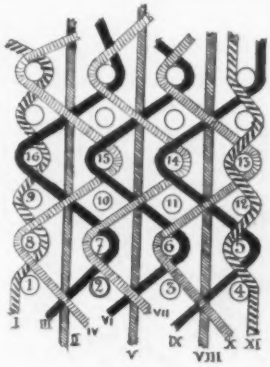


FIG. 11

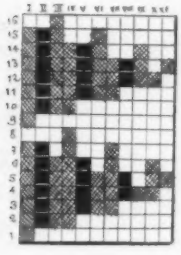
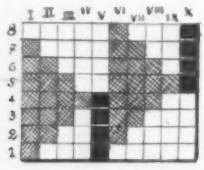


FIG. 12

4-ply belting shown at Fig. 5. The stuffing threads, II, V and VIII, remain at all times stretched straight between two fabrics and are drawn on a special harness. The weave

for this belting fabric is shown at Fig. 12. The stuffing threads can be of a different material from the other yarn, if desired. Fig. 13 shows a section of a 4-ply belting, the weave being shown at Fig. 14. Four

FIG. 14



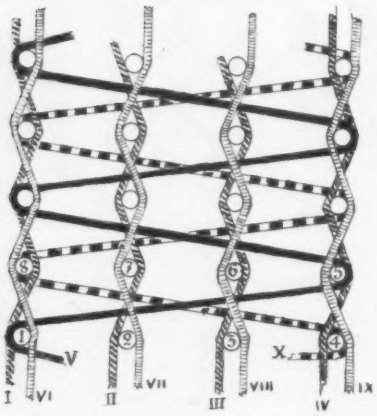


FIG. 13

separate fabrics are superimposed and stitched together by the threads, V and X. These stitching threads interlace the filling of the two outside cloths. Fig. 15 is a section of a 6-ply fabric of the same kind. This class of belting can be easily made with

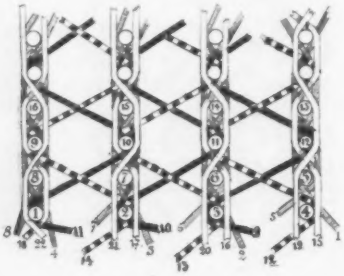


FIG. 20

stuffing warp, but it is evident that a fabric made in this way will not give as good results as in the fabrics previously described,

in which most of the threads work alike. The examples we have given show that it is easy to draft a 3, 4, 5 or 6-ply belting from

FIG. 19

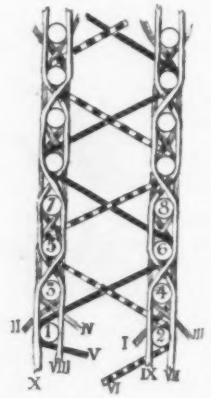


FIG. 17

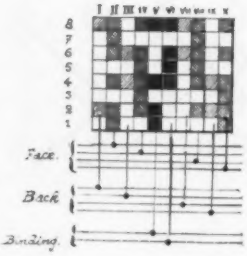


FIG. 18

a 2-ply. Fig. 17 shows a section of a belting fabric, the weave being shown at Fig. 18.

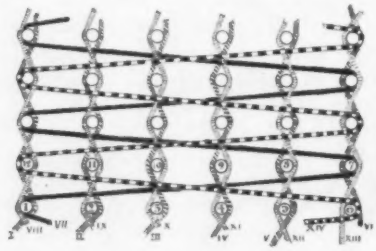


FIG. 15

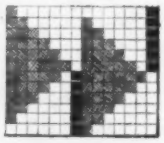


FIG. 16

This belting consists of two cloths, each being woven with the weave shown at Fig.

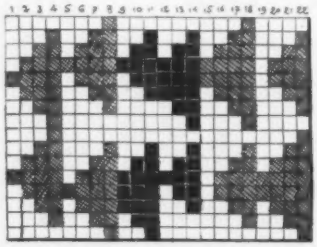


FIG. 21

19. There are four threads on the face for each four threads on the back. Two threads are used for stitching. All of the yarn is

2-ply. As shown in Fig. 18, this weave requires 10 harness. Fig. 20 shows a section of a 4-ply belting of the same class, the weave being shown at Fig. 21. This draft is obtained readily from Figs. 17 and 18. The weaving of belting presents no special difficulty. The warp is usually drawn one thread in each dent. Fig. 18, for example, would require 10 dents for each weave pattern.

A PROBLEM IN MANUFACTURING RATINE CLOTH

BY GLOUCESTER.

As the different seasons approach bringing their different styles of novelty weaves, they also bring new propositions for overseers of weaving and designers. The following interesting experience I have had along these lines might prove of value to some of the readers of this magazine. We were making a ratine cloth with a plain weave, 1 end 20s, 1 end ratine, about 2,600 yards to the pound. The 20s yarn was made from a cheap grade of cotton. The reed was 12 1/2 dents per inch. This would appear to be a very coarse reed, but is not too coarse for this style of goods. We had considerable trouble with the ratine yarn chafing the 20s yarn. The warp was drawn in the reed as shown at Fig. 1. The cloth measured 39 3/4 inches in the reed and 36 inches when woven, a contraction of 9 1/2 per cent. This caused the 20s yarn to chafe on the right-hand side of the warp for about four inches, but it was all right on the left-hand side. Fig. 2 shows how the ratine yarn pulls away from the 20s yarn at 1, while at 2 both threads pull even, while at 3 the ratine yarn again pulls against the 20s yarn. When the shed was being formed the ratine yarn rubbed against the 20s yarn causing it to untwist and come apart in the reed for a space of about 4 inches from the right hand selvage. If the 20s had been a better grade of yarn this would not have happened.

The filling in these goods was tussah silk and as it was almost all dyed two shades, cotton dye and silk dye, the 20s, being a cheap grade of yarn, did not affect the wear or appearance of the goods. I finally overcame this trouble with chafing by crowding one dent closer to the other about four inches from the right hand side, making it half of its regular size, as shown at Fig. 3, and then slightly bending about six dents on each side of this dent so that the wide space would be divided among twelve dents. This part of the yarn was then redrawn in the reed, starting with the half size dent with one end of ratine, then drawing 1 end of the 20s yarn and 1 end of the ratine in one dent as shown at 2, Fig. 3. Only a

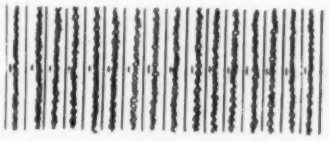


FIG. 1

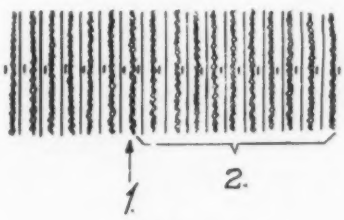


FIG. 2

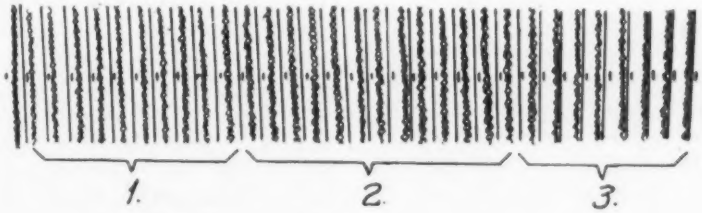


FIG. 3

very slight reed mark was caused by crowding the dents, and this did not show after the cloth was finished. To have a reed made like this in the first place would cost a little more, but the results would be satisfactory.

TESTING SILK

BY GAUL

Translated from the French by the Editor of the Textile World Record.

Various conditioning houses in France as well as others engaged in testing silk, test the working qualities of the material by the following method: Five ends of silk are tested for two hours, or ten ends for one hour during the reeling process, the silk being run at a speed of 55 yards per minute. The number of broken threads occurring during that time is noted and from this a calculation is made as to the number of skeins that can be placed in charge of one operative. Long experience has shown that the maximum number of broken threads which an operative can piece up in one hour is eighty. Persoz has compiled the following table showing the number of breaks and the corresponding number of skeins for each operative:

Number of Breaks.	Number of Skeins.
5 to 8	90 to 100
9 to 10	80 to 90
11	70 to 80
12 to 13	80 to 70
14 to 15	50 to 60
16	45 to 50
17	40 to 50
18 to 19	40 to 45
20 to 22	35 to 40
23 to 26	30 to 35
27 to 30	28 to 30
31 to 34	25 to 30
35 to 38	22 to 25
39 to 44	20 to 22
45 to 50	19 to 20
51 to 57	16 to 18
58 to 59	15 to 17
60 to 68	14 to 16
69 to 74	13 to 15
75 to 79	12 to 14
80 to 84	10 to 12

This table has been modified somewhat for use at Lyons and Milan. In the Italian table the number of skeins is calculated mathematically while at Lyons there is considerable variation. Following is the Lyons table:

Number of Breaks.	Number of Skeins.
0 to 7	100 and more
8	100
9 to 10	80 to 90
11	70 to 80
12 to 13	80 to 70
14 to 15	50 to 60
16	50 to 55
17	45 to 50
18 to 19	40 to 45
20 to 22	35 to 40
23 to 25	30 to 35
27 to 30	28 to 30
31 to 34	25 to 30
35 to 38	22 to 25
39 to 44	20 to 22
45 to 50	18 to 20
51 to 57	16 to 18
58 to 59	15 to 17
60 to 68	14 to 16
69 to 74	13 to 15
75 to 79	12 to 14
80 to 84	10 to 12
85 to 100	8 to 10
101 to 114	7 to 8
115 to 133	6 to 7
134 to 160	5 to 6

THE WOOL GOODS MARKET

New York, Aug. 1, 1914.

During the last three weeks a general opening of various fabrics adapted to the wholesale clothing trade has been made, with varying results.

Serges have met with a liberal sale for the standard makes, but they have not sold as freely as they did last season. Prices opened at an advance of from 2 1/2 to 12 1/2 cents per yard for fabrics made from half blood and other of the best grades of wool while fabrics made of quarter blood stock opened at slight declines in prices up to five cents per yard below former prices. There are several new makes of serges being offered, some of them showing marked ability in manufacturing. It however has proven to be an unfavorable time for new lines as the demand is not so great but that it can be filled by the mills already well established on the market. Also buyers are adverse to experimenting with new and unknown makes; they prefer to patronize the fabrics that have given satisfaction in the past.

The disturbing factors in the serge market at present are the new and exceedingly popular tropical fabrics which are being offered, in various grades, by a large percentage of

selling agents. These fabrics have taken the lead in sales over all other fabrics. They are just what are needed to enable men to dress more comfortably during the hot season; they are more appropriate for summer wear than are darker and heavier serges. Buyers are placing orders for good sized quantities and with more confidence than on other spring or summer fabrics.

These goods are made principally with cotton warps filled with mohair and make particularly desirable summer fabrics and very attractive styles and colors.

There is considerable difference of opinion as to their effect on sales of serges; some claim that they will be extra, two piece suits suitable for hot days and business wear only, in which case they would not effect appreciably the sale of serges.

This is doubtless true to some extent but the goods are being made in medium colors suitable for wear during the entire summer season. They probably will be so worn by the masses that comprise the great consuming public. The two piece suits being cheaper than serge and other suits, they are likely to wear such tropical suits at the expense of better fabrics that will not be so comfortable for the hot weather.

One objection to serges is their decided tendency to wear shiny long before the goods begin to show wear in other ways. This has caused many to stop buying serge suits.

Some serge mills made extensive preparations for doing business on tropical or so called Beach Cloth and have been exceedingly successful. One of the most prominent mills has had an immense business on their new tropical cloths, which are of a better quality than many of the cheaper fabrics being offered. Their prices range from around 60 cents well up to a dollar per yard. Judging from reports around the woolen district they have sold enough tropicals to employ the greater part of their large plant for the season, naturally they will not be in position to accept orders for their well known and popular serges to the extent they were formerly sold.

The great bulk of serge orders taken has been secured by our domestic mills as the foreign serge business done here last season proved to be very unsatisfactory. The low grade goods were especially so, many of them being unmerchantable and were rejected. The foreign business being done, as far as can be learned, is principally on lines of fine goods. In serges and fancies, which have been established here for some time, a largely increased business is being done.

The placing of orders for low grade three-quarter goods is well advanced. Some leading mills of prominence have secured orders which will carry them well along in the manufacturing season under full production. The majority of mills are not so well provided with orders. Certain lines with fabrics and styles that are perfectly satisfactory to the trade report a large number of very small sample orders on their books. They expect that, with their goods widely placed in sample lots, they are in position to get the required business on duplicate orders and that such orders, being placed after the goods are sold in clothing, almost always hold good, while orders placed early are cancelled when the styles prove to be poor sellers in clothing. This is all very good in a way, but it does not help out the early production of a season which is essential in running a mill for profit.

Some mills making three-quarter goods are making tropical fabrics of cotton warps filled with mohair. Some particularly desirable lines are being offered by them and they are receiving liberal patronage.

Fancy worsteds are being shown with considerable success and they doubtless will meet with their usual sale. It however is a little early for them and the greater part of the business is still to be done.

Carded woolen fabrics are in better demand than usual and the business being done amounts to considerable proportions. The lower prices for these fabrics than for worsteds are in their favor and where styles and fabrics are attractive they are securing a good share of favorable attention on the part of buyers.

Vigouroux mixture fabrics have grown in favor and the indications are favorable to a largely increased sale for them. They make

very attractive garments in desirable mixtures for summer wear.

The growing practice of buyers placing very small sample orders for all kinds of men's wear fabrics is causing considerable adverse criticism in the woolen district. As long as a fair number place quantity orders it will give mills enough work to run their machinery until the duplicate business begins to come in. The trouble is that the small orders are increasing and many mills do not get enough work early in the season to keep their plants in operation. The commendable feature is that it prevents the accumulation of stock piece goods that has been the bane of woolen manufacturing. The manufacturers' method of making only the goods actually sold has extended to the wholesale clothiers and from them to the retailers. They are reported as buying sparingly early in the season and duplicating as their sales require.

The out of town trade was late in coming to the city but they have been arriving during the last ten days and will soon be here in full force. As they get to work placing their orders there will be a large increase in the business being booked. The western buyers seem confident of a satisfactory business on account of the unprecedented yield of farm products of all kinds. If they place orders in proportion to the ideas they profess to believe regarding the coming spring season's business there will be a large order business done during the month of August.

The announcement recently made by the American Woolen Co. that they will offer special fabrics and styles in women's wear for the dry goods jobbing trade has caused considerable favorable comment. It has been known by a few that they have prepared some particularly desirable and new effects that are quite likely to prove successful. Tropical fabrics are also being styled for women's wear and the prospects are good for a fair business on them.

The past season for women's wear has been a disappointment to most sellers, the duplicate business being small.

The value of textile machinery imported into the United Kingdom during June, 1914, was $45,364.

PRINCIPLES OF MODERN MILL MANAGEMENT

BY EUGENE SZEPESI

(Continued from July.)

A yearly saving of $10,000 will warrant a yearly expenditure of $3,000 or more. The question is also brought up, How far is it profitable to expend money to effect a saving? Modern methods of mill management can be overdone as well as underdone. Many managements which have been progressive enough to accept the principle of modern mill management, suffer today from over systematization—so caution and moderate conservatism is desirable before any mill management decides to undertake such development work.

The practical application of scientific management will vary with every branch of the industry and sometimes even in the same line. Every business has its strong and weak points, peculiar to that certain establishment. While in one case irresponsible fluctuations in orders may be the cause of inefficiency, in another case lack of, or a constant shift of labor, may be the cause of the trouble. For the former, the greatest effort should be centered on the perfection of a planning and dispatching department, while for the latter, the problem will be: What possible steps can be taken to bring a steady desirable labor? Again it may be that old customs retard desirable improvements, or help of low industrial standard. There is a remedy for each, but it should be carefully investigated and thought over, before it is applied, as to whether the results will justify the outlay. Right here I wish to correct a falacious belief abroad, referring to a certain phase of scientific management, namely, motion studies. I find that it is a general belief that under modern mill management principles, the detail operations must be studied with utmost accuracy, or in other words, motion studies instituted; unnecessary motions eliminated, which let me frankly admit, would be quite a painful task if universally applied to the textile industry. The idea has spread, since Taylor conducted his first investigation in scientific management, by motion studies, and he uses some

space in his works on this subject. Gantt also spends quite a time on it, and finally, Gilbreth filled a whole book with this subject, in his admirable work on motion studies. The readers generally fail to observe that Taylor investigated labor that is all motions, the pig iron carriers and ore shovelers, and Gilbreth performed his observations on masons and kindred labor where everything is "motion." In digging a ditch, buffing metal, welding iron, and similar operations, the whole work depends on motions and the elimination of the unnecessary will being the desired results.

This is not so important in the textile industry. Here it is not the actual motion which is of greatest importance, but the position of the worker, the tool, the light, and the time wasted through delays from waiting. Let me explain what this is by an actual example. Let us take the operation of weaving for instance. To weave one must have time for the following operations: Running the loom, change filling, tie up broken warp ends, pick out bad filling and other defects, fix a broken part of the loom, change warp.

The running of the loom is purely mechanical, without the control of the weaver, with the exception of starting and stopping, and this operation occupies only one second and constitutes such a small fraction of the total time loss, that even if a weaver consumes twice as much time, there would be no visible loss of production.

Change of Filling—The numerous time studies I have made gives .08 minutes as a standard for an average worker. Some weavers perform this operation in half the time, but this is the time actually required to make the change and very often a half minute or more is consumed before the loom is started up again, which is caused by the bad position of the filling supply, bad condition of the bobbins and poor shuttles. It is a much harder proposition to reduce this .08 minutes through motion studies than by finding the best position for the filling rack and inaugurate a better manner of handling the filling. While on the motions I could have saved only .04 minutes, on the delays I saved a minute.

Tying Up Broken Warp Ends—This only takes .07 minutes in the average, but from .3 up to 3 minutes is sometimes consumed in performing the operation. When breakage is too frequent, poor spinning, sizing or warping is to blame, and the remedy should be found in those departments. Nevertheless, threads will break, and the average breakages per hour can be determined for every grade. I also observed that finding the thread on colored goods required less time in daylight than in artificial light. This is reasonable. Some mills may have poor illuminating facilities. The lights are too high or too low, and poorly placed lights is a common fault. Proper illumination in most cases will cut the time required in looking for the right end into a fraction. On looms where warps of black or a very dark shade are mostly run, a white sheet of paper placed under the warp between the beam and the last harness will work like magic in the reduction of tying.

To Pick Out Bad Filling—The cause is usually negligence on someone's part, which proper control and discipline will correct.

Fixing Broken Parts of Loom—It would be useless to instruct the fixer how to use his hammer and screwdriver. Here, standardization of the inspection of the looms will be the remedy. The policy of inspecting the looms systematically, especially when warps are changed, and preventing small imperfections from becoming larger, will cut down idleness through breakage. Also a thorough standardization of supplies will help. The best picker stick is the cheapest one, no matter how much it costs.

Changing Warps—I had the most varied experience. I have records of this operation from 17 minutes up to half a day. It is never the actual work that takes long, but lack of standards and discipline. The have-everything-ready policy will eliminate running around for things in the last minute.

This example refers to the whole textile industry in general. It is not always the motions that count, but the preventable waste of time. I will not cite more examples, but suggest testing it on any department.

Harrington Emerson mentions supernal

common sense as one of the principles of scientific management. This is the true corner stone, and for general application three principles must be worked out by the management for every department: Standards of Production, Standards of Waste, Standards of Supplies. These three constitute the pulse of the mill, the measure, the unit, to which the actual performances are compared. To work out these standards is not such a complicated undertaking as it might at first seem. A carefully made time study, using the average worker in a department, will accurately reflect the actual operation. Ten or a dozen time studies made on similar articles will give an absolute certainty for standards for every detail, and thus standards for the whole operation may be computed. This is an absolutely fair and correct record for both the mill and the worker, where an overestimate, underestimate, and prejudice will not enter.

Standards of Waste—In every department a certain quantity of waste is made on every machine; this is legitimate. In drawing, for instance, some of the bands will become useless; this is waste. The same is true of spinning; some roving will become unfit for further use. In mule spinning again, a certain length of roving must remain on the spool to make joining possible. Waste studies for a certain unit production, where care is taken that nothing is thrown into waste, except the absolutely unpreventable, will give the mill officials a standard that is more than guesswork; it is based on actual facts. An undue excess of waste over the standards will generally bring out negligence or mechanical defects, which otherwise would have been unobserved.

Standards of Supplies—Recently in a mill established over thirty years, it was decided that a standardization of supplies would be more advantageous than the old method. A general supply room was erected, supplies of all descriptions and machinery reserve parts moved into it from every part of the mill, and an inventory taken, which revealed very queer conditions. The mill had on hand a carload of unused machinery parts belonging to machines which long ago had been discarded. Gears, belts, vibrators, pulleys, knuckles and other machine parts—packages of heddles unused but rusty and twisted, enough belting for fifty years, cracked and caked from neglect, enough oil cans to supply a mill three times the size, nails, screws, bolts, nuts, kegsful of them, new and old mixed together. It took two days for the junk man to cart away supplies unfit for further use, that cost thousands of dollars originally. The same mill made an article twenty years ago which required a special attachment for the looms. They made the same article last year, but new attachments were ordered, since the old ones could not be found. Overseers had changed in that department many times, so no one was to blame. These old attachments came to light during the general housecleaning, in a neglected corner of the shed, with a heap of rubbish on the top which served as a home for a rat family of ancient lineage.

I wish I could impress strongly enough that the difference between a coin or currency and merchandise of any character is only in its form, and ill used wasted material differs little from the dollars put into the fire or jammed into the refuse can. No one ever heard of checks and money in a mill unaccounted for, but for merchandise and supplies, that is another thing. It is one of the most important points of modern mill management that the only difference recognized between currency, merchandise and supplies, is the form. They all represent value, and while for the first, every mill has a responsible steward, for the second, every mill should have an equally responsible stock clerk. It is not the prevention of dishonesty that makes such steps inevitable in modern management—while in some cases this is a reason too—but the prevention of thoughtlessness and the knowledge of human nature, which we know by experience is ever wasteful of plenty. Put out five packages of tacks for five mens' use. On inspection it will be found that the second package has been ripped open while the first is not yet entirely empty. Tacks are strewn on the shelf, on the floor. Then place only one package for the five, and you will not fail to

see the difference. The first is the outcome of the psychological influence of plenty. The cost of supplies can be surprisingly cut by standardized conditions.

The procedure is not a difficult one—it requires two things—a concentrated stock room under the charge and responsibility of one man, and a perpetual stock record with fixed high and low limits. Nothing is ordered unless the stock reaches the low limit and the quantity ordered never exceeds the high limit. What the limits should be depends entirely upon the article. A machine part or a gear which is called for only at long intervals, will have but one limit; while on brooms, for instance, the low limit will be a dozen, the high limit five dozen. The rule is that the low limit will be sufficient to supply the mill during the time required for new delivery, which depends again on the article—the high limit for a supply at a reasonable time, but not to tie down too much capital. Hard and fast rules are impossible; individual judgment must determine what limit is the most economical.

The record is kept on a card system, and every time stock is given out the amount is deducted, the high and low limits are marked on the card, and should the stock reach the low limit, additional supplies may be ordered at once. Supplies are given out to the departments on requisitions only, signed by the department head. In picker sticks, spinning bands, and similar supplies, the departments carry a limited quantity, while oil cans, brooms, machine parts, etc., are carried by the stock-room entirely, and the requisition must state for which machine it is intended. These requisitions reach the manager every day and by lookng them over he is soon able to tell if the use of a certain supply increases unduly and will be able to investigate at once.

With dependable standards for production, waste and supplies, a mill has the assurance that wasteful expenditures will show up clearly and definitely at once, when remedy is yet possible, and not in the yearly balance in decreased profits or even loss, when it is too late.

Manufacturing is not a purely mechanical problem, neither should it be expected that the individual manager can meet expectations, unless means and ways are devised to exercise his judgment and ability, instead of splitting his time up on details, to keep the ball rolling.

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A NAME FOR ARTIFICIAL SILK

Editor Textile World Record:

Regarding a name for artificial silk, in my opinion it should be distinctive, with a logical derivation, and should not be arbitrarily chosen like some of the fanciful and silly names given to patent medicines and breakfast cereals. The origin of artificial silk is cellulose—the indestructible cell structure or solid framework of plants, deprived of all extraneous matter, a vegetable and not an animal substance. "Artificial silk" is no more "silk" than ramie noils, or mercerized cotton yarns with a brilliant luster are silk, and therefore no use of the word "silk" in any form or combination should be considered. As artificial silk is derived from cellulose, I suggest cellulin, or, better, celulin, as a name that is distinctive and at the same time euphonious.

Charles Richards Dodge.

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The Jacquard machine for weaving figured goods was easily the greatest invention in the textile world since the invention of the loom itself. Joseph Marie Jacquard was a poor weaver, born in Lyons, July 7, 1752. He completed his machine about 1800, and exhibited it at the Exposition of National Industry in 1801, obtaining a bronze medal. Napoleon's police had a sharp eye for smart men, and Jacquard was one day suddenly taken in charge by an officer and sent to Paris. Napoleon, convinced of Jacquard's ability, placed him in charge of the Conservatoire des Arts et Metiers, and gave him a pension of 1,000 crowns. In 1804, Jacquard returned to Lyons where a mob smashed one of his looms on the spot where his monument now stands. Two years later the Government bought his invention and made it public property.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

POLISHED YARN AND SEWING THREAD

BY GAUL

Translated from the French by the Editor of the Textile World Record

Cotton sewing thread is known in France under the names Irish, Scotch, Alsace, etc. The thread is made with dull finish and also polished in all shades. The dull finish is usually cable thread, that is, made with a variable number of ends of ply threads. Polished yarn is ordinarily made by twisting two or more threads of single yarn together. The regularity and solidity of the finished thread depend upon the number of single strands of which they are composed. Cable thread is more uniform and stronger. It is easily recognized from the appearance of the surface, which is similar to that of a fine twine. The number indicates the size of the single yarn. This is followed by a number indicating the number of strands; thus, 80-6-ply indicates that the thread is formed of 6 strands of single 80s. The manufacture of cable yarn requires two successive operations: twisting the single yarn to make a ply yarn and then retwisting the ply yarn to make the cable thread.

The first twisting is done on an ordinary twister, on which the yarn is delivered to the ring spindles by a single pair of rollers. In order to set the twist the yarn is dampened by passing through water in a small trough set behind the feed rolls. Mules are sometimes used in place of the ring or flyer frame for twisting. The ply yarn is always twisted in a direction the reverse of that of the single strand. If 3-ply yarn is to be made the three ends are wound on special bobbins in order to obtain a uniform feed and twist. The required number of ends of ply yarn are then wound on one bobbin, the winder being equipped with a stop motion, as it is necessary to stop the spindle as soon as an end breaks. The ply yarn is twisted on either a ring or flyer frame, the latter being preferred for coarse yarn, as it enables a harder twist and a rounder and fuller thread to be obtained. The direction of the twist given to the cable yarn should be the reverse of that given to the ply yarn and consequently the same as that of the single yarn. Imitation cable yarn is sometimes made in cheaper qualities by substituting for the ply yarn a single yarn equal to the former in size and to which a successive twist has been given. For example, in place of uniting three ends of 2-ply 80s and thus obtaining a cable yarn formed of 6 ends of 80s, the imitation yarn is made in one operation by twisting together 3 ends of single 40s of hard twist. Although the cost of the yarn is less, it will be readily understood that the strength and

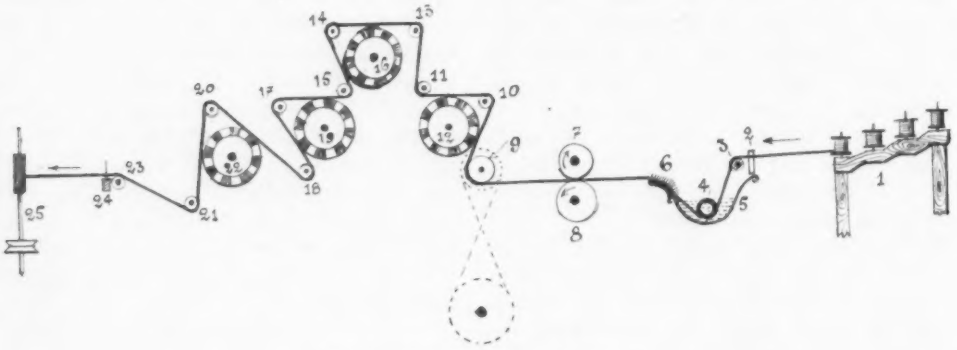


FIG. 1. RACK FOR HOLDING SPOOLS

uniformity is much inferior to the cable yarn made by two operations.

When thread is made from single yarn by one operation the required number of ends of single yarn are wound on the same spool and twisted together as already described. The thread is then reeled to prepare it for bleaching or dyeing. The skeins are usually reeled to a certain weight regardless of length.

In many cases the thread is prepared for bleaching by boiling in water either in an

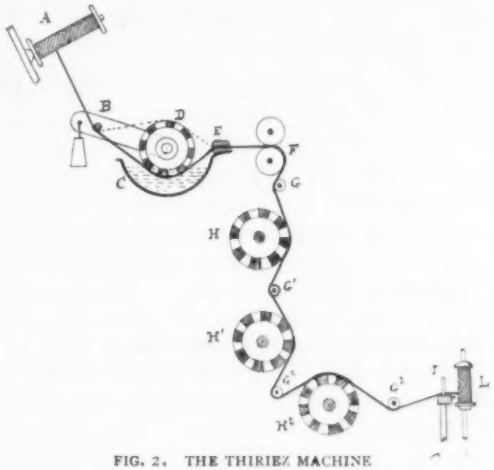


FIG. 2. THE THIRIEZ MACHINE

open tub or in a closed kier under pressure of 20 to 30 pounds. Boiling off in an alkali solution is better than boiling in water as it softens the cotton and removes the impurities. The alkali solution is made with caustic soda or carbonate of soda, with or without soap; say 3 per cent. of caustic and a small quantity of oil for red. After boiling off and rinsing the thread is run through a weak acid bath. Sometimes it is first passed through a solution of chloride of lime and then soured in acid. It is then rinsed thoroughly, and if a very clear white is desired, a small quantity of azure blue is added.

The thread is colored in skeins in a tub with a capacity of about 1,000 pounds (120 gallons) of water. The skeins are entered in a wet state and worked in the ordinary manner. After dyeing, the material is rinsed and dried. Having been bleached or dyed, the thread is subjected to a series of finishing operations to give the appearance desired. For a dull finish the thread is softened by pulling and stretching on pins by hand, the object being to distribute the twist uniformly throughout the yarn. The twist settles in places where the yarn is very hard while other parts are too soft. The skein is passed over a pin and jerked by means of a wooden rod. This operation tends to increase the luster. The skein is then twisted tightly with a stick and hung on a fixed bar, the operation being repeated several times.

Yarn is polished in two ways, in skeins or thread by thread. By the first method the skeins are immersed in a finishing bath and then dried. They are next stretched between two corrugated rolls, one of which is stationary while the other is moved by means of levers and weights, which causes a severe stretching of the yarn. These two rollers turn slowly, bringing the skein in contact with a cylindrical brush about 16 inches in diameter. As the brush revolves about 800 turns per minute, the yarn is highly polished, the process being completed by a revolving drum covered with wool plush which comes in contact with the skein. This method is used extensively in England. While it is cheaper, it does not give as good results as polishing thread by thread, which is the method adopted in France. By this method the yarn is first wound on large spools. From 100 to 120 of these spools are placed in a rack behind the machine, Fig. 1. The end from each spool passes through a dent in the reed, 2. The sheet with the different threads parallel is then guided over the glass rod, 3, under the copper roller, 4, and through the finishing solution in the trough, 5.

The thread next passes over the brush, 6, which distributes the finishing solution, the excess of which is squeezed out by the copper press rolls, 7 and 8, which are covered with cloth, and returned to the trough. The yarn is drawn by contact with the positively driven wood roller, 9, the speed of which is regulated to suit the size of the yarn. Passing over the copper guide rollers, 10 and 11, the yarn is brought in contact

with the revolving brush, 12, which is about 4 inches in diameter and revolves at a speed of 1,000 to 2,000 turns a minute. In like manner the yarn passes over the guide rollers, 13 to 21, is brought in contact successively with the brushes, 16, 19, and 22. The yarn then passes over a small roller, 23, and through a reed, 24, each end being wound on a separate bobbin, one of which is shown at 25. This process keeps the different threads separated and gives the thread a very high luster.

Fig. 2 shows the Thiriez machine, which does not give as good results as the process already described, but is simpler and occupies less space. The thread coming from spool, A, passes under the guide roll, B, then under the brush, D, which presses the yarn into the finished preparation in the trough, C. In some cases the yarn is impregnated with the solution and passed over the brush as indicated by the dotted lines. The speed of the brush is varied to suit the size of the yarn while the tension is regulated by the rod, B. The yarn then passes between two small cushions, E, which are pressed together to regulate the amount of finishing solution left in the yarn. The roller, F, regulates the draft on the yarn and permits of more or less brushing over an equal length and consequently gives more or less luster. The yarn delivered by roller, F, passes under the guide rolls, G, G^1, G^2 and G^3, bringing the yarn in contact with the revolving brushes, H, H^1 and H^2, regulating the finish and imparting pliability and luster to the yarn. For fine yarn rollers covered with cloth are sometimes used in place of the brushes, H, H^1 and H^2. The waxed yarn then passes through a guide, I, which vibrates up and down to the spool, L, on which it is wound.

Some finishing preparations are applied hot and others cold. Ordinarily, the solution is made up as follows:

Water .....lbs.	10
Rice or wheat starch	1/5
Saponified wax	1/10

A small quantity of gelatine, Irish moss or flaxseed is added to thicken the composition. Spermaceti, stearic acid or paraffine is sometimes used in place of the wax. A small quantity of borax is added to prevent mold.

IMITATION WOOL

BY GAUL

The process of manufacturing imitation wool, invented by Messrs. Cyprien Villedieu, Fred Lambert and Alex. Coumbary (French patent 459,406, Sept. 4, 1912) consists of the well known process of mercerizing. It is applied to Senegal hemp, this fiber giving better results than when used on jute. The bath is prepared as follows:

Cold caustic soda solution, 15° to 35° Be., 94 to 97 parts.
Peroxide of sodium, 2 to 5 parts.
Soluble oil, 1 part.

The caustic solution mercerizes the fiber, causing it to curl and rendering it transparent. The peroxide serves to bleach the filaments and give them the color of natural wool. The oil imparts a soft handle. The time during which the hemp fibers remain in the bath varies according to the nature of the material. After removal they are passed through an acid solution at 1° Be. An addition to the patent, dated October 10, 1912, covers certain improvements. In place of mercerizing with caustic soda the material is immersed in a bath containing a solution of peroxide of sodium and ammonia in equal parts at 2° Be. As a result of the action of the ammonia the fibers are animalized by the incorporation of nitrogen, the peroxide of sodium serving as a bleaching agent. Rinsing in a solution of acid and then in pure water finishes the process. The material after drying is carded in order to give it the appearance of natural wool. When mixing the imitation product with natural wool it is necessary to use special dyestuffs such as Black E B S (Bayer), Red B P (St. Denis), Blue B J and Yellow F F (Lyon).

The Italian cocoon crop of 1913 amounted to 70,560,000 pounds and that of 1912 amounted to 91,731,820 pounds.

ENGLISH NOTES

By Our Regular Correspondent

The slack time of the year finds British mills slack indeed and disposed to short time or—what is the same thing—long holidays. Spinners of average counts of American cotton are losing too much money to need pressing to adopt short hours and the Federation asks for only an 80 per cent. majority for its proposal to cut out three weeks between mid-July and the end of September. There are cotton weaving manufacturers who are giving three weeks' holiday this summer and from every cotton district the news is bad. Affairs get worse in Bradford despite the appreciation of wool values and although the position varies from mill to mill, there are some who have known no such slackness for twenty years. Huddersfield is assisted by the good American demand for fine fancy worsteds, of which towards $330,000 worth were shipped to the United States during April; but the carded woolen trade of the district is so far from brisk that 200 workers have been dismissed from a Colne Valley mill. There are very slender prospects of any recovery in trade before the fall.

* * *

It is now possible to summarize the exports to America for the first half of the year and an abstract is given in tabular form below. A half year is a definite term and appropriate enough for stocktaking, but it cannot be said that the balances disclosed are other than could have been expected from the returns given month by month. For obvious reasons the period cannot serve as an exact criticism of the effects of the new tariff. The term has been one of poor or bad trade and high prices and six months is none too long a time for the bare purpose of finding out what will sell. The revision thus far has made an important difference to five great branches of manufactures. The cotton piece goods that have benefited are in the dyed, bleached, printed and colored yarn classes. Dyed cottons account for half of the 12 million-yard increase and bleached cottons are responsible for one-third. America has become in these abnormal times the third best market for exported worsted yarn and has bought at an average of 60 cents per pound. Business in carded woolen fabrics has more than quadrupled under the new conditions and has been done at an average of 78 cents per yard. Trade in worsteds and stuffs has increased quantitatively in the same ratio, but the average yard is worth only 31 cents. The enlarged takings of jute yarn are understood to consist mainly of Dundee rovings for the bagging trade.

Textile Manufactures Exported U. K. to U. S.
1 Jan.—June 30

	1913	1914
Cotton yarn .....lbs.	3,108,200	3,166,400
Cotton piece goods ....yds.	20,482,300	32,168,600
Worsted yarn .....lbs.	27,900	1,122,700
Worsted tissues .....yds.	991,300	4,241,400
Worsted tissues & stuffs, yds.	4,150,200	16,848,600
Carpets .....sq. yds.	64,700	224,700
Spun silk yarn .....lbs.	334,692	388,448
Silk broad stuffs .....yds.	126,449	121,505
Silk broad stuffs, mixed, yds.	191,643	730,923
Jute yarn .....lbs.	194,200	1,083,600
Jute piece goods.....yds.	42,916,200	34,731,100
Linen yarn .....lbs.	1,117,400	1,456,500
Linen piece goods .....yds.	61,658,500	62,392,800

* * *

It is worth while to notice the movement in the export of wool to America during the first six months of the year. The business has always been a fluctuating one and in 1913 the quantities were small. It may be that during 1914 the imports have been fully as large as American manufacturing conditions have warranted; and assuredly they have been larger and have sustained wool prices higher than has proved at all convenient to manufacturing consumers in England:

Wool Exported U. K. to U. S.
1 Jan.—June 30

	1913	1914
British .....lbs.	4,276,600	12,398,200
Foreign and Colonial ...lbs.	24,968,200	64,826,800
	29,244,800	77,225,000

* * *

A consular report directs attention to the steps taken at Manila to enforce a Government grading of exported hemp. After this year private grades are to disappear and Government men are to see that only one official grade goes into one bale. The measure is not unprecedented even in modern

times, for we get Government inspected food from Chicago and elsewhere and from Japan receive sealed and certified woven silk goods. Australia, while insisting on a sometimes misleading Government grading of refrigerated carcases leaves individual initiative unfettered in shipping the wool from the same animals. Marks play an unmistakably great part in the trade in hemp and flax and official bracking, or grading, is of old standing in Europe. These fibers had to be graded by public officials throughout the ancient days of the Hanseatic League. As late as 1834 the Town Council of Riga forbade merchants to have any but the top grade in their private possession and took charge of the second and third sorts to prevent accident after the official classification. In 1853 at Riga the official brack was reinstated although the arrangement held good for only four years. The marks on flax now are those attached by the shippers, but the Riga Exchange is not of the opinion that the compulsion of 1853-57 was a waste measure. To quote an official letter from the president and secretary of the Exchange:

> It had a tremendous influence on the proper working of flax and if this was not worked up to the standard of the various grades, the grower had to take it back and rework it.
>
> The merchant only being permitted to keep the highest and lowest grades in his own warehouses . . . was unable to blend the two, the difference in quality being so conspicuous. This gave the foreign buyers a guarantee for absolutely reliable deliveries and was the reason that Riga possessed such a good reputation in the trade.

Flax, retted and scutched, is not precisely on all fours with cotton in the seed or ginned, but the experience may have its interest in connection with current schemes for the Government grading of raw cotton in America. The final form of the Lever Cotton Exchange Bill is not known at the time of writing, nor have its general proposals been so fully disgested that mature opinion about them has been formed in any wide circles in this country. It can be taken as a general principle that textile men are incredulous of the efficacy of Government control in any such matters and are prompt to believe that more than one way can be found of evading any restrictions that may be laid upon the cotton exchanges. This hereditary tendency does not absolutely shut out belief that good can be done by interference, but it will be probably a long time before any measure that can be seriously compared to the Lever Bill gets through the legislature of this country. Should the bill pass and should its effect be to make markets more erratic it would be unpopular in Lancashire, but there are no grounds for thinking that industrial Lancashire is perfectly content with exchanges as they are, be they in New York, New Orleans or Liverpool.

* * *

It is best that recommendations for the advantage of the farmer should not always come from the manufacturer and in the matter of the domestic clip the Agricultural Organization Society is doing its obvious duty. By canvass and lectures it is persuading farmers to make the most of their wool by separating the bellies, locks and pieces from the bulk of the fleece. To the man who objects that it is not worth while for a small farmer to take the requisite pains the Society answers that it is the small man's business to cooperate with his neighbors both in the preparing and selling of his clip. To encourage Welsh farmers a leading Welshman has borne the expense of classing some 12,000 to 15,000 fleeces and with the result that classed Kerry Hill sold for 29 cents against an average 26 cents for the rest. Classed pick Welsh averaged 23 cents against 21 cents for unclassed. The margin is not wide enough in the opinion of farmers. The British farmer is making more use of the public fairs at which wool is sold at auction and in itself this system is a considerable step towards improved marketing. It is to be regretted that farmers in some districts have taken umbrage because the assembled buyers showed a determination not to go beyond an agreed limit of price and the experience may provoke some abstention from the auctions next year. The public system of selling is preferred by the wool merchants of the manufacturing centers to the dilatory method of buying in small parcels through local commission agents. Most of these agents make their purchase of wool a lever in selling other

goods to the farmer. The agent receives a fixed commission and he is never known to get hold of wool at less than the maximum quoted to him by his principal.

* * *

The new or proprietary fiber prepared in Germany and known as "Solidonia" has been mistaken by those who should know better for an artificial silk. The error is a tribute to the brightness of the fiber, as exhibited in the combed top, and also to its rather metallic whiteness. The handle is harsher than that of artificial silk and in a combed sample the longer fibers are some seven inches in length. Solidonia is offered as "an artificial wool, excellent for knittings . . . bright, strong . . . can be spun carded or as a worsted yarn to fine counts and be finished by the same processes as applied to wool." The Russian army authorities are stated to have chosen a Solidonia and wool mixture for their contract for gloves. A cheaper grade called Fibronia has been used in thick counts for carpet and belting yarn and has been carded with shoddy. A third form, known as "Lanella Fleece" is prepared specifically for carding with wool waste to make cheap woolen cloths. The materials are said to be made from a grass which in its original condition is brown and under the microscope the fibers are said to appear spear-shaped and jointed like bamboo, not flat like blades of grass. The material is somewhat highly inflammable and this is ascribed as one of the reasons why it has not yet been largely adopted by manufacturers in England. Apparently it is necessary to employ special machines not ordinarily possessed by woolen manufacturers and this constitutes a second barrier. The fiber has been tried by makers of specialties and has been examined for its suitability for the straw braid trade. The considerable energy that has been used to push the sale has not, however, overcome what is called English conservatism, although the fiber has found a good deal of employment upon the Continent. It is possible that in one of its cheaper forms Solidonia will be offered to jute manufacturers as a suitable material for making bags.

THE MANUFACTURE AND COST OF CHINESE GRASS CLOTH

VICE CONSUL CHARLES F. BRISSEL, Amoy

The second item of native exports from Amoy to the Philippine Islands during the year 1912 was Chinese grass cloth (declared exports $6,595 gold). The bulk of this grass cloth was made in the Province of Kiangsi and transported overland to Amoy, whence it was shipped direct to the Philippine Islands. Practically all of this cloth is used for the making of clothing, some being left in the native state, a brown color; a part, the better, being bleached to an almost pure white; while some is dyed, blue and black being the chief colors. In Swatow, China (about 90 miles south of Amoy), there is a considerable drawn-work industry using grass cloth, but there is no such industry in this city.

The material of which this cloth is made is a fine ramie grown largely in the Province of Kiangsi. There is some grown in the northwestern part of the Province of Fukien near the Kiangsi border, and in such localities some cloth is woven. The Kiangsi cloth and ramie are considered to be much better.

The weaving of this cloth is done principally by women and wholly in a native-made loom which is operated by hand. Some of the cloth is made in the houses of the Chinese, and a large quantity, perhaps the greater proportion, is made at "factories," buildings in which the number of looms may be 10 and to which the operative comes, but the equipment of such buildings in almost no way resembles the large factories such as the word "factory" stands for in the United States.

The weaving of one piece of cloth 34 yards long and 17 1/2 inches wide requires the entire time of one person for seven days, for which she receives approximately 50 cents gold. The thread used in making all grades of grass cloth is largely of the same grade, the difference in value of the various products being created primarily by the excellence of the workmanship exhibited by those who weave. The bleaching and dyeing is done after the cloth is made.

DETAILS OF COST

The following statement represents the approximate cost (in U. S. currency) of a piece of grass cloth 34 yards long and 17 1/2 inches wide (English measure) completed and delivered in Amoy:

4 pounds (3 catties) selected ramie, at 12 1/2 cents	$0.50
Cost of labor converting 4 pounds selected ramie stock into ramie thread, at 30 cents	1.20
Labor for weaving	.40
Profit for weaving house	.10
Freight charges, duty, likin, transportation from Kiangsi to Amoy	.65
Agent's profit about 5 per cent.	.15
	$3.00

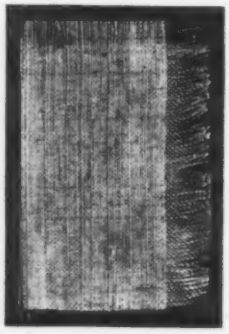
Bleaching and finishing about 3 per cent. extra; dyeing and finishing about 2 per cent. extra.

The foregoing statement represents the methods in the "factories," but the women who make the grass cloth in their houses prefer to buy the hemp unsorted, paying for the raw material 62 cents for 5 catties, or 9 3/8 cents per pound for 6 2/3 pounds. This the women sort, selling the refuse for use in making native rope and obtaining therefrom 25 cents, so that the cost of the 6 2/3 pounds of raw material to them is reduced to 37 cents, or to 5 1/2 cents per pound.

COMPLICATED MARKETING SYSTEM

It will be noted that a considerable portion of the cost of the cloth in Amoy is made up of duties and transportation charges. The method of production and marketing of this cloth will explain these apparent high costs. In order to assemble the products of the various places where the cloth is made, collectors go from house to house and from village to village collecting and buying the bolts of cloth. Having collected about 100 bolts, they then sell them to a buyer of the class that might operate a factory. These, in turn, sell them to the buyers who come from the coast cities or the large interior cities which either have a market for the grass cloth abroad or who can sell a great deal of the cloth in the cities in which the weaving of grass cloth is not an industry. The coast buyer, or perhaps the large collector in the interior, then arranges for the transportation of the grass cloth from the interior to the larger or distant cities. As there are no railroads and no highways, all the transportation is effected either by pack animals or the rivers. The larger part of the journey from Kiangsi to Amoy would have to be by pack animals.

The wholesale price of the grass cloth is determined by the buyers mentioned, the cloth being sold by them to middlemen and by the latter to local shops by classes, each class consisting of 20 bolts. For instance, Nos. 1 and 2 of the samples forwarded



A SAMPLE OF CHINESE GRASS CLOTH

might be included as different grades of the same class. Each lot of 100 pieces (or bolts) would cost about $300 (gold), but the classes will be divided so that one group of 20 may be worth $75 and another less than $60. Sales of less than 100 bolts would be considered as a middle ground between wholesale and retail, the latter being understood as selling directly to the consumer.

The value of the individual bolts is determined by the quality of the weaving as well as the grade of ramie used. Again, the value of the bolt depends upon the general uniformity of the weaving of that particular individual bolt, some being woven very uniformly at the beginning while near the end of the same piece the weaving may be much inferior. As all the weaving is hand labor, it is impossible to have the same degree of uniformity as is possible with machinery.

RETAIL AND EXPORT PRICES

The price of the cloth to the consumer varies considerably, as there is no one stand-

ard either as to cloth or price. When the cloth has come into the hands of the local shop dealer, he then subdivides the groups of 20, placing the higher prices upon those bolts or rolls which are made of the finer cloth and are woven with the greater care. It is plain that the ultimate price to the consumer depends largely upon the last seller. It is equally plain that there are many possibilities for making varying degrees of profits between the manufacturers and the final consumers. The finer grades of bleached cloth (sample No. 3) sell for between 3 1/2 and 9 cents gold per foot (8 to 20 cents Mexican per Chinese foot of 14.1 inches). Samples Nos. 1 and 2 sell between 3 3/4 and 5 cents gold per foot (8 to 12 cents Mexican per Chinese foot of 14.1 inches).

All the samples forwarded are made in Kiangsi and from Kiangsi hemp. The low average export prices per bolt for 1913 are given in gold as follows. (It is to be understood that these prices fluctuate each year with supply and demand.)

Sample No. 1.—34 yards by 17 1/2 inches (English measure). Lots of 100 bolts, $3.40 per bolt; lots of less than 100 bolts, $3.60 per bolt.
Sample No. 2.—34 yards by 17 1/2 inches (English measure). Lots of 100 bolts, $3.20 per bolt; lots of less than 100 bolts, $3.40 per bolt.
Sample No. 3.—23 yards by 15 3/4 inches (English measure). Lots of 100 bolts, $2.25 per bolt; lots of less than 100 bolts, $2.50 per bolt.

Before the importation of cheaper grades of foreign cottons, clothing made of grass cloth was extensively worn in the summer time by the middle and upper middle classes, but with the importations of foreign cottons the use of grass cloth has declined.

[The three samples of Chinese grass cloth accompanying Vice Consul Brissel's report were forwarded to us by the Bureau of Commerce. An analysis of sample No. 1 resulted as follows:

Warp, 67 ends per inch.
Filling, 78 picks per inch.
Average yarn number, equivalent to 36s cotton.
Weight, 5.80 square yards per pound.
Weave, plain.

The yarn in these samples is not spun, but is stripped fibers. We have asked Vice Consul Brissel for additional details regarding the method of warping and weaving.—Ed.]

CLOTH ANALYSIS

BY IRONTON

A designer is often called upon to dissect a sample of cloth to determine the size of yarn, number of threads per inch in warp and filling, color arrangement and weave. Most designers are able to do this, but many are unable to determine with certainty the composition of a piece of cloth which has been manipulated. The probable reason for this is that this class of work is "up to the superintendent." The designer who can take this task in hand and help out his employers or superintendent is likely to "go up one" in their estimation. The chemical test will show the proportions of certain materials in a piece of cloth. If a sample of cloth made of wool and cotton is placed in a boiling solution (3 per cent.) of caustic soda, the wool will be dissolved, and the cotton left untouched. If the fabric weighs 80 grains before immersion and 20 grains afterwards, the proportions are 75 per cent. of wool and 25 per cent. cotton. If the sample has been placed in a bath containing 5 per cent. hydrochloric acid, and then dried at a high temperature, what is left will be wool, the cotton having been destroyed. If silk, cotton and wool are used in the composition of a fabric, the silk can be detected by nickel hydroxide which will not harm the cotton or wool, but will dissolve the silk. Another method of testing is to take several threads from the cloth and by placing them under a microscope one can compare them with cotton, wool or silk.

Silk and mercerized cotton bear a very strong resemblance to each other, but on comparison under the glass it will be noted that the silk fiber is much smoother than the cotton. A common test of fibers is by burning, but the results are not so satisfactory as those obtained by the chemical test. Cotton burns with a flash, and only a fine powdery ash remains. Wool burns slowly in little darts of flame and forms a charred cinder. A strong smell, similar to that of singed hair or feathers is very noticeable. One who has had experience in the textile business can usually determine the nature of

the material in a sample by the handle and examination with the naked eye. Wool is soft, but cotton is more brittle and short. Silk is strong and very lustrous. If we have a black and white check, we would burn a few threads of the white or put them under the glass. We next take the black threads and by puting them through the same tests we decide whether they are made from a mixture of cotton and wool. Now that there is a chance for large quantities of fabrics entering this country under the new tariff, it would be a good plan not only for designers, but for others as well to learn how to analyze cloths.

—÷—

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

Translated and Revised by Samuel S. Dale

When it is desired to scatter the flakes or tufts irregularly over the face, the effect picks are woven with a 4-leaf broken twill or a 6-leaf satin weave. Striped montagnacs are made by arranging the effect floats in the form illustrated by Figs. 203, 204, 231 and 233. The effect floats are also arranged in straight, broken and herringbone twill order, depending on the prevailing fashion.

At Figs. 1543, 1544, 1546, 1547 and 1548 are several weaves frequently used for montagnacs and corresponding to the class of fabrics shown at Fig. 1537. None of them is constructed like Fig. 1540. The ground weave of each is plain; a broken 4-leaf twill or other suitable weave can, however, be used. In most cases a separate back texture is employed, the back filling interlacing with the back warp. Fig. 1542 is the face weave for Fig. 1543, the effect filling being woven in broken 4-leaf twill order. Fig. 1545 is the face weave for Fig. 1546, the effect filling being woven in 6-leaf satin order.

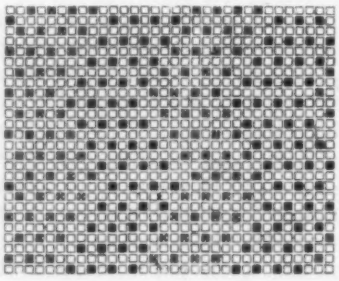


FIG. 1559

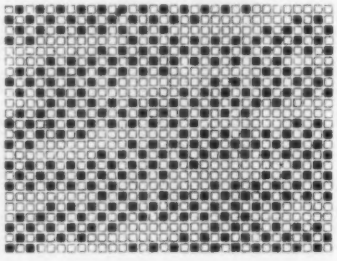


FIG. 1567

FIG. 1542

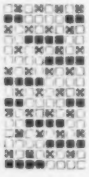
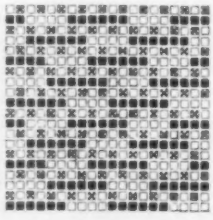
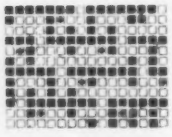


FIG. 1543





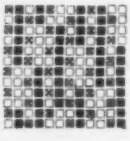


FIG. 1544

FIG. 1545

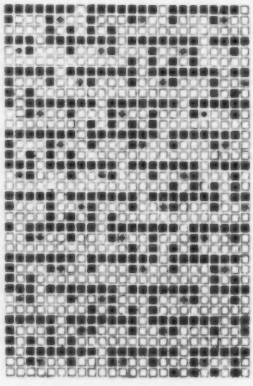


FIG. 1546

(Copyright, 1914, by Samuel S. Dale.)

In Fig. 1544 the back weave is a broken 3 up 1 down twill; the stitching is in the same order. The face weave is shown at Fig. 1542, the effect floats being distributed in broken 4-leaf twill order.

At Fig. 1548 the face is the same as at Fig. 1547, the back weave being a broken 3 up 1 down twill. The weave is stitched from back to face in broken 1 up 3 down twill order.

FIG. 1549

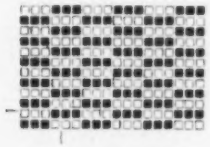


FIG. 1550

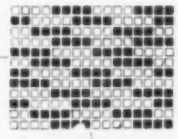
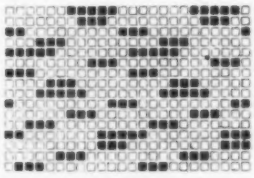
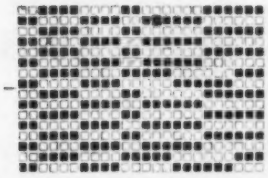
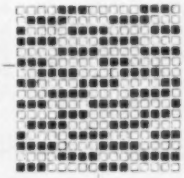


FIG. 1551







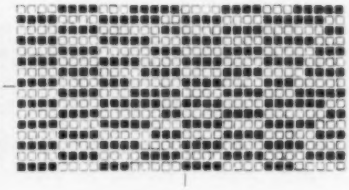


FIG. 1552 FIG. 1553 FIG. 1554

Fig. 1543 is a montagnac face weave only, the effect floats being scattered in 5-leaf satin order.

In Fig. 1546 the back weave is a broken 3 up 1 down twill; the stitching is in the same order.

Fig. 1545 is a face weave; the effect floats are scattered in 6-leaf satin order.

Fig. 1547 is a face weave only; the effect floats are scattered over 12 threads.

Figs. 1548 to 1558 show various arrangements of the effect floats with the construction illustrated at Fig. 1540 which, as already explained, is used to cover the face more completely with the tufts or flakes. This construction is better adapted for stripe effects, but can be used without difficulty for the production of checkerboard, twill, herringbone and other patterns.

Usually an effect pick is followed by 1

FIG. 1555

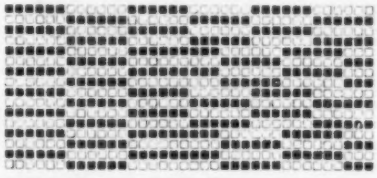
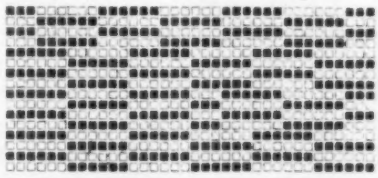
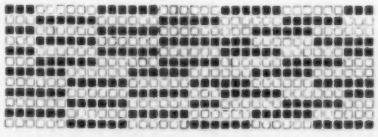


FIG. 1556





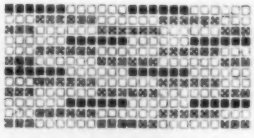


FIG. 1557 FIG. 1558

ground and 1 back pick. Frequently two effect picks are woven before the ground pick.

In a third variety of montagnacs the ground filling is omitted. Instead, the effect pick is alternately floated on the face and

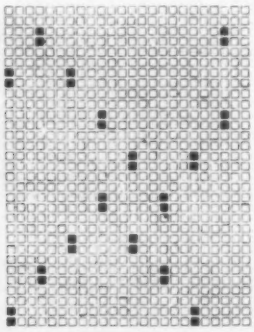


FIG. 1560

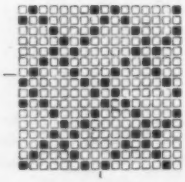


FIG. 1561

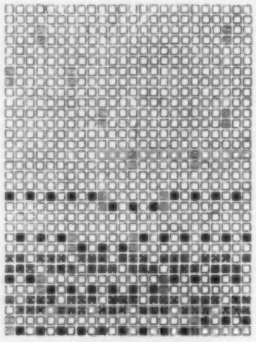


FIG. 1562

woven plain, as at Fig. 1559, which shows the effect picks only. Every two adjacent effect picks form a plain pick and a continuous floating pick.

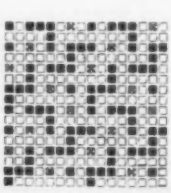


FIG. 1563

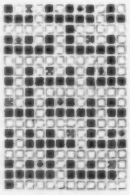


FIG. 1564

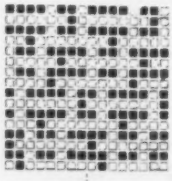


FIG. 1565

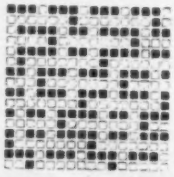


FIG. 1566

In constructing a weave of this kind it is advisable first to draft the motif for the design in the form of an ordinary weave, as shown at Fig. 1561. This motif is then transferred to the full size draft by leaving 2

motif. Fig. 1560 shows the 8-thread motif at Fig. 1561 thus enlarged.

This enlarged sketch, Fig. 1560, is a plan for the drafting of the effect picks. Each pick of every pair is made to float over the warp threads with which the other pick is woven plain; thus each pair forms a continuous floating pick and a continuous plain pick. The risers on the plan, Fig. 1560, are not transferred to the draft, Fig. 1562, but serve merely to indicate where the float and plain interlacing shall be transposed. The draft is completed by stitching the back picks, one form being shown at Fig. 1562.

Weaves with a broken 1 up 3 down twill,

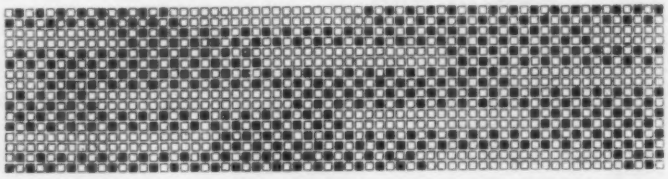
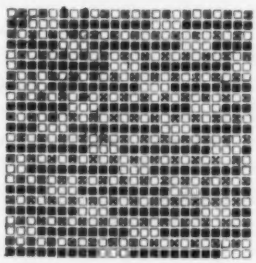


FIG. 1568

vacant warp threads between each line of the motif, and by alternating 2 vacant picks with 2 others corresponding to each line of the filling satin or similar weave on the face are also used for montagnacs. These are made either with a separate back texture, as shown

at Fig. 1563, which is a broken 4-leaf twill on face and back, set 1 and 1 and stitched from face to back; or are made with a stuffing pick, Fig. 1564, in which the face is a 6-leaf satin, the back, a 3-leaf pointed twill. The warp is set 1 and 1; filling, 1 face 1 stuffing 1 back pick. Some fabrics are made

FIG. 1547



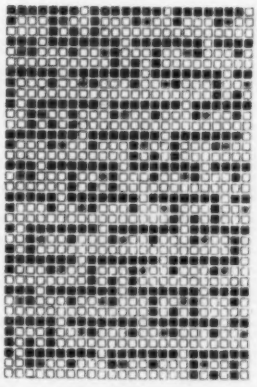


FIG. 1548

with a single warp and a face and back filling, as shown at Fig. 1565 and 1566, in which the face is a modified satin; the filling is set 1 face 1 back; two successive back picks interlacing the warp in the same order.

Fig. 1564 is stitched as shown at Figs. 1477, 1478, 1479, 1482 and 1483. The stuffing pick passes above a face warp and under a back warp thread, thus fastening both face and back to the stuffing pick.

A modification of the montagnac fabric is the fulled boucle cloth in which the filling is alternately floated and stitched plain for a considerable number of threads. The warp is cotton, the filling mohair or similar stock. During the filling the floating picks are formed into ringlets on the face of the cloth. Two weaves for this construction are shown at Figs. 1567 and 1568.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

EXPERIENCES IN A COTTON CARD ROOM

BY TUMBLER

When I was twelve years old I began to work in the card room. My first job was to doff cans, for which I received $3.50 per week. I had to doff 60 cans every hour and sweep the flour. At the end of six months I witnessed an accident to a boy about my age. He was pushing a belt on a card pulley when his hand slipped and he fell, his arm went around the pulley pulling him around with terrible force. He struck on the frame work of the card and split his head open about four inches. They had to take him to the hospital where it took some time for him to recover. After I had been on the job for a little over a year I was changed. The overseer made me spare hand. If any of the help were out I would do their work. This lasted for about four years and at the end of that time I had a good idea of running the different machines. My next work was scouring drawing frames. I had to scour six drawing frames every day. After I had been on the job for a while I began to understand the rolls and got a good idea of what a drawing was. I had never been interested in cotton machinery up to that time, but had always done my work properly simply for my wages. One day when the overseer was talking to me about my work the superintendent came in the room and walked up to the overseer and said, "Are you training this lad to be your future second hand," and they both smiled. I walked away to my work, but began to think that it would not be a bad idea to be a sec-

ond hand. I made up my mind then that I would stick to the carding room until I got a second-hand position. After I had scoured for about two years I was made a spare section hand. My wages had been raised several times and that encouraged me a great deal. If any of the section hands had machines break down they would send for me and I would help them. That kept me very busy for a while and gave me an opportunity to learn about cards, combers and speeders. One day a section hand on the combers and drawing frames went out on business and I was put on his section. I was a little nervous, as it was my first time on a section alone. Everything went all right until late in the afternoon, when a boy showed me one of his drawing frames. It was stuck and would not start up. I was glad it was a drawing frame that was out of order instead of any other machine, as I thought I could fix it up in a few minutes, but I was mistaken. I tried to start it up two or three times, but failed. I then raised all the covers on the frame and looked at all the rollers to see if they were all right. The rolls were free and I was just going to look at another place when the overseer walked up to me and asked me what the trouble was. I told him and he began looking around. He felt of the coilers. The second coiler was a little warm. He made me touch it. I raised the coiler cover, took the coiler out and we found a piece of dirty waste caught between the coiler holder and the coiler. It was in there so tight that it had stopped the frame. I took the waste out, cleaned and oiled it up in good shape, then put the coiler back again. I started the machine up and it ran smoothly. The overseer stood by and watched me while I had worked and when I stood up and watched the drawing run he tapped me on the shoulder and said: "You're doing fine, my boy. You just keep it up and you will get there in time."

About a week later I was sent into the picker room to help a fitter who had come from the shop to reset all the pickers over again. When I got in the picker room the fitter was waiting for his helper. I told him I was going to be his helper, but he told me he did not want a kid for a helper, so I went to the overseer and told him what the fitter had said. He came back to the picker room with me and told the fitter that I was the spare section hand and was the one that should help him, but that did not satisfy the fitter. Every time there was any heavy lifting to do he would pick up his end with a jerk and he would almost drop it when it came to putting it down again. I did not complain, but did all I could to please him and let him have his own way, so when he saw that I was willing to help him all I could he began talking to me. The first thing he said was: "I will make a picker fixer of you," and at the end of the second week we were great friends. He began showing me how to fix the pickers and in one month from the time we started I was doing his work and he was doing mine. This he did just to let me get an idea of taking a picker down and resetting it again. Every Saturday he would go home to Pawtucket and return Monday morning. One Monday morning he came in and gave me an address of a mill in New Bedford where they needed a picker man. I took the address, but did not write because I thought I was too young. It took us three months to finish the job and before he left town he gave me a new set of wrenches. I stayed in the picker room with the section hand for one month after the fitter had gone, so if anything went wrong I would be there to help the section hand.

One Monday morning the overseer sent for me and told me to go with a certain section hand who was working his last week. I went and told the section hand that the overseer had sent me to learn all I could for that week. He was a good natured man and showed me all he could about the room. By Saturday I was handling the work fairly well. Monday morning I was in the room early to see that everything started up right. About eight o'clock the overseer sent for me. I went to his office and found a stranger there. I was introduced to him and then the overseer said:

"Show this man all you know about the room and explain the work to him the best you can."

I was so surprised I could not speak, but just walked out of the office and the stranger followed me. I went back to my work and began explaining the work to him. He could see that I was disappointed over what had happened and told me that he was not to blame for it. All he knew was that the superintendent had written to him and asked him to come. I told him that I was not angry with him and that I would show him all I could.

About ten o'clock the overseer came in the room to see how he was getting along, so I asked him if that was the way he did business and he asked me what the trouble was. I told him I did not think it right to put a stranger on that section and leave me spare hand; that he should have given me a chance, and if I did not make good he could put someone else on the job. He said that it was the superintendent's orders and he could not change them. I was so angry by that time that I told him to settle up with me, but he would not do so. I then told him I would work a notice. When he saw that I was angry he left me. I did my best to teach the new man all I could and on Friday morning I was told to go to the overseer's office. When I got to the office the superintendent was there. The overseer told me to sit down and I did so. He asked me if I was still on my notice and I replied, "Yes." He said I would be sorry if I left them and they tried to have me tell them where I was going to work. I told them that I could get work anywhere if I wanted to look for it. I asked the superintendent what his reasons were for giving that section to the stranger and leaving me behind. He said that the man was no stranger to him, that they had known each other for a number of years and he knew that he was a good man, that was the reason he gave him the job. I told him that did not help my case any and that I would be done with them on Saturday. When they saw that I had determined to leave them the overseer asked the superintendent if he could raise my pay. I spoke up then and told them that the only thing that would keep me with them would be to raise my pay $2 per week. After talking the matter over for a while they agreed to give me the $2 per week raise. I returned to my work and stayed with the new man for two weeks, then the overseer took me away.

The company had placed an order with an English firm for thirty-six combers and had received word that the machines were on the way, so the overseer set me to work throwing the old combers out. It took me about one month to do that and by that time the new machines had arrived. I opened the boxes and wiped the oil from the different parts and laid them on the floor ready for the fitters. I had several combers cleaned up when the fitters came to the mill. The overseer put two boys cleaning the machines and put me helping the fitters. I did all the filing there was to be done and helped them to set the combers up. The men were very nice and that made things easy for me. We put up twelve drawing frames, seven lap machines and thirty-six combers in about six months time. The fitters had shown me how to draft the new machines. When they left I stayed around the new machines as oiler and would help the section hand do his work.

One morning a card grinder was setting his grinders when the emery on one of his grinding wheels broke and struck the grinder in the eye, making it necessary for him to stay out for three months. I was put on his work while he was out. I had ground cards before, but not for any length of time and it was hard for me for the first two weeks, but after that I got along well. When the card grinder came back to work I became a spare section hand again. I helped around the room for about a month when a section hand gave in his notice. The overseer asked me if I wanted that section. He said it paid one dollar a week more than I was getting. I told him I would take the job. He then sent me with the section hand to learn all I could while the man was working his notice. The following Monday I was alone on the section and glad of it, because I was getting tired of being changed from one job to another. The section consisted of 6 breaker drawing, 3 sliver lap machines, 27 combers, 9 finishing drawing, 2 slubbers, 4 intermediates, 12 fly frames and 28 jack speeders.

(To be continued.)

A COTTON WEAVING MILL

From Uhlands Technische Rundschau.

Translated from the German by the Editor of the Textile World Record.

The plan of a cotton weaving mill, built by Carl Kopala, Turnau, Germany, to accommodate 320 looms, is shown in the accompanying drawings. Fig. 3 shows that the main building, which is rectangular in form, is divided into two sections by the beltway. The larger section, L, is used for a weave room; the smaller section, for the preparatory processes, P, and other accessory departments. The toilet rooms, s and s', are located at the end and outside of the weave room. Light is admitted into the weave room by means of windows in the side and end walls and skylights. The room is divided lengthways by posts into nine bays or sections, and crossways into six sections. There is a 15 ft. 9 in. section at each end of the room and seven 23-foot sections between. Crossways there are two sections of 14 ft. 9 in. each, two of 19 ft. and two of 18 ft. 4 in. each. The ceiling at the side is 14 ft. 9 in. above the floor, and in the center, 16 ft. 2 in. The light from above enters for the entire width of both of the center bays or sections, that is, for a width of 38 ft. The two windows in the roof are 4 ft. 3 in. and 6 ft. 7 in. high. The skylights in the roof, as shown in the drawing, extend the entire length of the mill, the weave room being 192 ft. 2 in. long.

The roof is supported on cross beams, 6 in. by 8 in., which are covered with plank and a double thickness of paper. The glass in the skylights are 4 in. by 8 in. The I beams resting on the posts are 11 1/2 in. high and coupled by plates. Each post rests on a stone base supported by a pier of masonry.

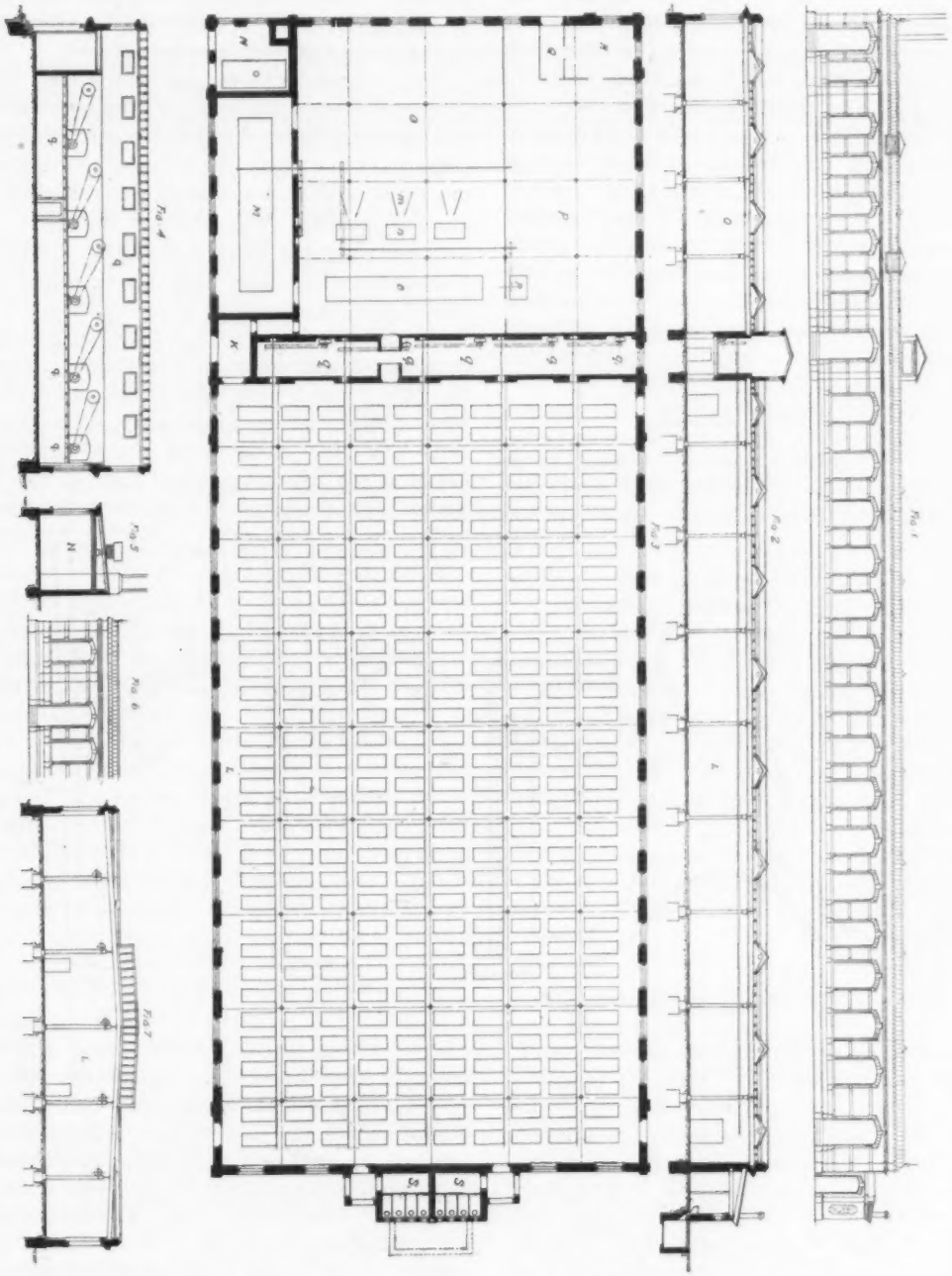
The looms are arranged in groups, one row being set in each outside bay and two rows in each of the other bays. As a result the widest alleyways are at the sides of the room, the other four being narrower. One line shaft drives two rows of looms, each shaft being driven by a separate motor. This gives the so-called group drive which is considered superior to the individual drive, although the room is encumbered with belting and shafting. There are two wide alleyways, one at each end of the room running crossways, and a smaller passageway between each pair of looms giving excellent facilities for transporting the material. Three exits at the corners of the room enable the operatives to get out of the building quickly in case of need. Each door is 5 ft. 7 in. wide by 7 ft. 10 in. high.

The entrance to the weave room is through the corridor, K, by means of a door 4 ft. 7 in. wide by 8 ft. 2 in. high. The weave room is connected with the preparatory process by a passageway 4 ft. 7 in. wide, through the beltway. There are five electric motors in the beltway, each resting on a stone pier and driving a shaft as already explained. The beltway is 6 ft. 3 in. wide, the wall on each side being 24 in. thick. The roof of the beltway is raised above the roof of the main mill, as shown in Figs. 1 and 2. The doors in the beltway by which passage is effected between rooms O and L, are each 3 ft. wide and 8 ft. high. Otherwise the beltway is completely enclosed and separated from the main rooms.

The section of the mill at the left of the beltway is divided into two parts by a wall 12 in. thick. One division is 18 ft. 5 in. wide. This is in turn divided by cross walls into a corridor 5 ft. 9 in. wide and a room 51 ft. 10 in. long and another room 14 ft. 9 in. long. The steam boiler is located in the last-named room, N. The room, M, is used for sizing the warps. Access to this room from the preparatory room, O, is obtained by means of two doors, each 4 ft. 7 in. by 7 ft. 10 in. The boiler room is reached from the outside, as shown. The windows in both rooms, M and N, are each 5 ft. 7 in. wide and 9 ft. 10 in. high.

The boiler room is much too small to accommodate the boiler, as can be readily seen by reference to the plan. The chimney is built in the boiler house, the steam plant being used only for heating and boiling purposes. The slasher in room, M, is driven from the shaft running from the room, O. The rooms, O and P, used for the preparatory processes occupy a space 76 ft. wide by 84 ft. 4 in. deep. Each is divided into

twenty bays by twelve posts set as shown in the plan. This room is divided by a partition into two large sections, the one, O, being used for the preparatory machines and the other, P, for the measuring and inspecting departments.



The office is located in the room, R, access to which is obtained through the cor-

ridor, Q. The rooms, M, N, O, P, Q and R are all located under the same roof, the construction of which is the same as the roof covering the weave room, except that the skylights are 5 ft. 3 in. wide. The warp yarn is spooled and beamed in the room, O, three beamers being shown in the plan. The remainder of the room is used for drawing-in, twisting and the storage of woven goods. In the sizing room, M, is a cylinder slasher.

With the exception of the two outside rows, the looms are built for weaving goods 33 to 35 inches wide. The looms in the outside row have a reed space of 70 inches. Fig. 1 shows the elevation of the mill, the outside having an attractive appearance.

A LOOM BRAKE

The mechanism for stopping looms, shown in the accompanying illustration, has recently been patented in this country and is described by the inventor as follows: Ordinarily the belt drive is shifted by means of an operating lever and when it is required to stop the looms a shoe is applied to a wheel, the brake mechanism being brought into operation the instant the loom is thrown out of action by the shifting of the drive belt from the tight to the loose pulley. This improved arrangement provides means for releasing the brake after it has been applied to stop the loom so that when the operating lever is actuated to start the loom the latter may respond quickly because of its freedom from the brake which has been previously released. An attachment is applied to the operating lever to release the brake after the loom has come to a standstill.

Fig. 1 shows the frame of a loom, the drive pulley and brake wheel together with the operating lever. Fig. 2 shows the operating lever and parts, the relative position of the brake lever and operating parts when the loom is running. Fig. 3 shows the parts in position when the loom is stopped.

The operating lever may be arranged in any convenient position so as to throw the loom into or out of action. The main shaft is provided with a brake wheel and pulleys, the latter comprising the usual tight and loose pulleys which cooperate with a drive belt. Suitable connections are interposed between the operating lever and drive belt for shifting the latter. A brake shoe is arranged to engage the brake wheel and is mounted upon one end of a lever, the opposite end of said lever being connected to the brake lever. The brake lever is fulcrumed between its ends and is rigidly connected at its lower end to a lever, which forms a continuation of the other lever. The weight of the combined levers is greater than the weight of the brake shoe, hence when the outer end of the lever is unsupported the brake shoe is held in engagement with the brake wheel.

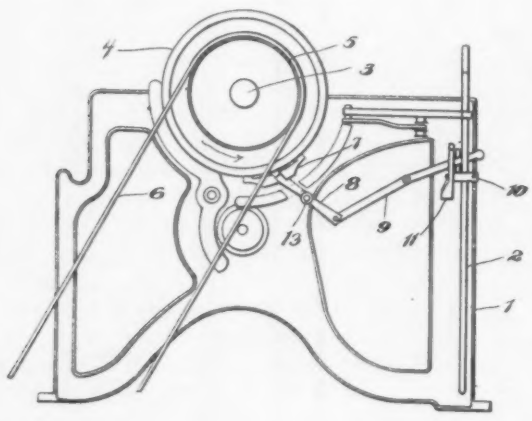


FIG. 1

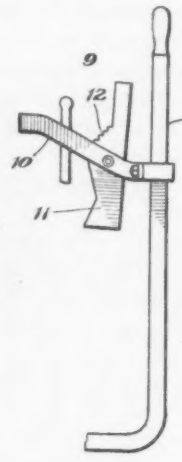


FIG. 2

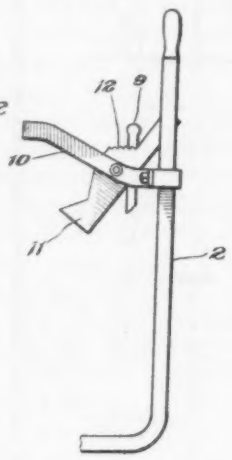


FIG. 3

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

BLEACHING FLAX AND HEMP YARN

Editor Textile World Record:

We bleach flax and hemp yarn, and have a considerable loss each year through bleachers burning the stock with chloride of lime. Could you state the right proportions of chloride of lime per gallon of water? Our method of bleaching is as follows: We place yarn in the kier, cover with cold water, add soda ash, boil and leave to steep over night. Wash thoroughly and prepare for putting on bleaching machine. The bleaching liquor is about 100° F. and 6° Tw. Run until a satisfactory color is obtained, then thoroughly wash all trace of the bleach out of the yarn. Remove yarn and place in the muriatic acid bath. Run off the sour liquor and fill up with cold water. Boil, then wash and prepare yarn for hanging on poles. Mayfair (2240).

I do not wonder that "Mayfair's" goods are burned with using chloride of lime at 6° Tw. When explaining his method "Mayfair" states that he covers the goods with water, adds soda ash, boils and leaves to steep over night. I presume he brings the liquor to a boil and then leaves it on the steep. If this is correct, he will have to do more than steep them. He should boil the goods from four to six hours and then wash before putting on the bleaching bath. When boiled as above it will not be necessary to use the chemic at 6° Tw., as 2° to 3° would be enough, especially if used in a hot bath. When the desired color is reached be sure that all traces of the chemic is washed out, as this is where the damage is done, especially when using a strong chemic. If there is any chemic left in the goods when put on the sour bath it will not be long in burning the fabric. The damage may have been caused in the acid bath. "Mayfair" states that the goods are boiled after the acid bath; if the goods are thoroughly washed they should not require boiling after the scouring. If the goods have been boiled with traces of acid left in them I do not wonder that the yarn became tender. The difficulty may result from any one of the following: Using the chloride of lime too strong; not washing out the lime thoroughly before putting into the sour bath; leaving acid in the yarn and then boiling.

I would advise trying the following method: Put the yarn in the kier as usual with not more than 2 per cent. of soda ash to the weight of yarn; boil for six hours; wash thoroughly out of kier and make ready for the chemic bath. Do not make the chemic any stronger than 3° Tw.; 2° ought to bleach them in a hot bath at 90° to 120° F. If necessary let them stay in a little longer to get the desired color rather than use a stronger chemic. When the desired color is obtained be sure and wash out all traces of chemic and then give the goods a sour bath at 1° Tw., letting them lie in the bath for about three hours, taking care that the outside edges do not get dry. When aged for this length of time all traces of chemic in the goods ought to be neutralized. If the acid is thoroughly washed out the goods do not require a further boil.

Alpha.

HUMIDITY IN NARROW FABRIC MILLS

Editor Textile World Record:

Please give us some information regarding the use of humidity in narrow fabric mills.

Simon (2335).

The advisability of using artificial methods for moistening the atmosphere when weaving narrow fabrics, is largely dependent on the character of the goods to be made, the kind of material used, and upon the locality in which the mill is situated. The same relative advantages will be obtainable in narrow fabrics as are found in the manufac-

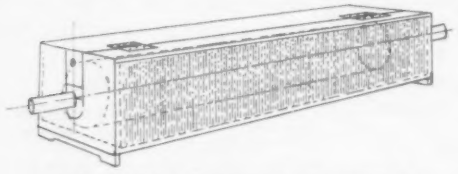
ture of wide goods, where the prevailing conditions are similar. In finely woven and closely packed fabrics where the friction at the reed is very severe, the advantage derived from an atmosphere charged with moisture, whether artificially or otherwise, is very apparent, enabling a cheaper yarn to be used. Should the mill be situated in a naturally humid section the advantage to be derived from the installation of humidifiers is not so great. It is almost impossible to weave satisfactorily any kind of an elastic fabric in a moist atmosphere. A humid atmosphere increases the friction on the elastic thread and a chafing and weakening of the thread is the result. Dalkeith.

SHARPENING THE LICKERIN

Editor Textile World Record:

What is the best way to keep the licker sharp on a cotton carding machine? Bangor (2320).

The best way for sharpening the teeth of the licker-in is to make a box, about 14 in. by 14 in. and 40 in. or 45 in., depending on the length of the licker-in, and fill this box about three-quarters full of sand, putting the licker-in in the box and running it about 65 revolutions per minute. The sand should be sifted so as to get it as nearly uniform as possible. Use sand of medium size. No. 40 emery is better than sand, but on account of the large quantity it takes it is difficult to



A SAND BOX FOR SHARPENING THE TEETH IN THE LICKER-IN

get the emery. The sand will sharpen the points on the teeth. Should the teeth get smashed by a piece of cotton tie or some other hard substance the only remedy is to take out the damaged teeth and put in new. I am quite sure the sand box, shown in the illustration, will be found to answer the purpose. Norwich.

The saw tooth clothing on the lickerin of revolving cards does not need sharpening. This saw tooth clothing with which the lickerin is covered is made from thin flat steel wire with a shoulder on one edge. The teeth are formed by cutting out a portion of the thin edge wire, making it resemble the edge of a saw. The wire is inserted in grooves which are cut spirally in the shell of the lickerin. After the wire is inserted, the edge of the groove next to the shoulder is upset slightly by pressing a hardened steel disc over its surface which prevents the wire from pulling out. A lickerin covered in this style requires no cleansing, stripping or grinding, and is superior in every respect to the lickerin covered with card clothing, which was used on the old style stationary flat cards. A file can be run between the teeth to sharpen and straighten any that may have been knocked down by accident. Winton.

The best way to keep the lickerin sharp on a carding machine is to straighten up all broken down teeth and run the lickerin backward. Lay an ordinary brick on the feed plate. Press the brick against the lickerin so it will gradually travel across the entire length. By repeating this several times it will sharpen the teeth. To even the length of the teeth put the lickerin in a lathe and file the teeth true. Run the lickerin backwards and thus file off the high teeth until they are all even. Then smooth it off with the brick. After doing this the lickein ought to do good work. Care must be taken, however, or the teeth will be cut off altogether. Lakewood.

MARKET FOR VEGETABLE SILK

Editor Textile World Record:

We hand you a sample of fiber and would appreciate your either passing it to the right concern or giving us names and addresses of houses who could use it. This product is entirely new and is called vegetable silk. It is controlled by us and originates in a commercially unknown source of supply. We can obtain it in large quantities and quote 20 cents a pound, c. i. f. dock, New York, cash 10 days from date of invoice. This material is in the condition as found, not having been dyed or manipulated in any way whatever.

Wilcock (2338).

We referred this question to a fiber expert who replies as follows:

This appears to us to be a fiber which comes from the thistle or cactus, which we believe grows extensively in Mexico and South America. It will be impossible for us

to use this fiber in our mill as it is extremely brittle and of very short staple with scarcely any elasticity, which we should think would be a drawback to it for use in mixing with silk. Kirkcaldy.

SECONDS IN MANUFACTURING UNION SUITS

Editor Textile World Record:

What is the average percentage of seconds in manufacturing union suits from spring and latch needle cloth among the better mills? We cut up all of our cloth regardless of holes and sew the holes up for seconds. Clayton (2244).

We referred this question to a number of the leading knitting mills making union suits and have received the following replies:

No. 1. We cannot say definitely what would be a fair allowance for seconds in manufacturing union suits. Much depends on the quality of the stock, method of handling, also the standard of quality of the finished product. Part of our production is made on what is known as automatic tuck stitch machinery. In this department the average is about 6 per cent. of seconds. The part of our production made from 1 and 1, or plain stitch goods shows an average less than one-half of 1 per cent. of seconds.

No. 2. We have not had any experience in making up goods by cutting the cloth regardless of holes. It has been my experience for many years that the most economical plan is to have careful cutters who will cut the cloth, turning the holes to advantage in the different parts of the garment where they could be worked in. We could not say what the average percentage of seconds would be with the method of cutting described. We do not make union suits for men and women, our product being confined entirely to children's goods. We would consider in this class of goods from 3 to 5 per cent. about the average, depending of course on the quality of the yarn and class of goods running. Bleached white goods will make a larger percentage of seconds than unbleached.

No. 3. The seconds in manufacturing in both our mills averaged one-half of one per cent. for the year 1913.

No. 4. We would say that one per cent., that is one dozen suits out of every hundred dozen manufactured, is the limit that any manufacturer should permit to be made into seconds. There is no good reason for making more than this. To get this result it is necessary to have good yarn, good knitting, careful bleaching and dyeing and extra good cutting. "Clayton" states that he cut up his cloth regardless of holes and then sews up the holes for seconds. We think more seconds will result from this method than when the cutter inspects each length before it is cut. If holes cannot be turned out it may prove to be a good practice to cut off a short length containing the holes and use this short length for gussets and shoulder straps. This will increase the cost for cutting, but the saving in seconds will more than cover this extra cost. A few seconds are made in the dye house and the finishing room, but with proper care they should not amount to more than one-tenth of one per cent.

No. 5. If the holes could be cut out there would be about 4 or 5 per cent. of seconds, but when cutting without regard to holes the number of seconds depends entirely upon how the cloth is running, and 10 per cent. might not be excessive.

No. 6. We inspect our fabric before cutting and eliminate most of the seconds in that way. Our percentage of cutting waste under these conditions is about 12 per cent., but this includes the legitimate cutting waste as well as defective fabric. Our percentage of seconds in finished garments is very small. We have no figures at hand, but it is considerably less than 1 per cent.

BLEACHING KNIT GOODS

Editor Textile World Record:

We are sending you a piece of two and two knit fabric in the grey as it comes from our machines, also a piece of the same goods after coming through the bleaching process. You will note that after it is bleached it has a dead feel and has lost much of its elasticity. We pack 1,400 pounds of goods carefully in the kier in which we use a solution of 22 pounds of caustic soda, 15 pounds of concentrated ash and 3 quarts of chipped soap. We boil for 8 hours with a pressure of 22 pounds. The kier has two 2-inch circulating pipes. After boiling for 8 hours, we drain for one-half hour and fill the kier from the top through a distributing pipe which distributes the water over the entire surface of the fabric. We allow the goods to stand for one-half hour and then drain from the bottom. We fill again and then circulate the water for one-half hour through the outside circu-

lating pipes and drain for about one hour before running in the bleach solution. This solution is 1° Tw. We let it remain in it for 2 hours, when we rinse in running water.

The sour bath is sulphuric acid and water. We rinse in two different tubs of running water by a continuous string over reels. Each reel takes 150 to 175 feet of fabric. We use one reel for the rinsing after running out of the bleach before going into the sour, and five reels for the water after going through the souring. We then run the fabric in a hydro-extractor for ten minutes to extract the water, and dry in a continuous dryer at 150°, then roll the goods ready for the cutting room. Please let us know how to get a bleach that will retain this elasticity and give a good color. Balanga (2325).

I have concluded, after examining the samples, that they were bleached with caustic. This method of bleaching is as follows: The goods are first sewed together in kier lots in the grey room or receiving room ready for the process of bleaching. The machinery required is as follows: One saturating machine, one souring and washing machine, one high pressure kier. Behind the kier there should be placed a large washer, a chemic machine and a souring machine with pits or bins for the ageing of the goods after the chemic and acid baths. We will suppose that there is a three-ton kier and that the three tons of cloth are sewed together in the grey room. These are first passed through the saturating machine, through the sour bath onto a stage where the acid will decompose and loosen up or degum the material so that it will bleach easier in the kier. This sour bath is used at 1° to 1 1/2° Tw. and the goods are left to age for about four hours, when they are washed in the kier with one per cent. of caustic soda and one to one and a half per cent. of soda ash and boiled for eight or nine hours. They are then washed out of the kier and passed through a chemic bath at a strength of 1° and left on the pits or bins until all the seeds and motes are out of the goods, when they are washed into the sour bath at 1/2° and left to age about 3 hours or until the acid has neutralized the action of the chemic. They are then washed in the white pits or bins, when they are ready for the dyeing and finishing process.

We will take the white sample first. After the bleach is finished the goods are mangled out in order to squeeze out all the surplus water and get them in shape for starching. This is done on a two-bowl mangle with two heavy wooden rollers and levers and weights for adjusting the pressure on the cloth. The starching solution is as follows: Take 80 gals. of water, 20 lbs. corn starch, 20 lbs. potato starch, 15 lbs. dextrine, 10 lbs. wheat starch, blue to shade desired. Add the starch to the water, dissolving it thoroughly and slowly bring to a boil for two minutes, making when boiled, 100 gals. of starching solution. Take this to the starch mangle which has a roller in the bottom of the starch box. Pass the goods underneath the roller so that the starch covers both sides of the material when mangled.

After starching dry the goods. Experience is required in the starching and finishing of the goods. If there is not enough body to the cloth, relieve the pressure on the mangle a little. If this does not give the desired result increase the solution in strength by adding a few pounds more of starch or cutting down the quantity say to 80 gals. for the same weight of starch.

If the goods seem open after this process pass them through a heavy calender, then bring them back to the mangle and pass them through a wetting-out solution of about 10 lbs. corn starch, 10 lbs. wheat starch to 40 gals. of water. Bring to a boil in the tub and then pass the goods through this solution. Dry again, and they should then be finished off the dryers so that the oatmeal effect will stand well up on the material. Possibly the sample marked No. 3 has not been calendered and then wet out afterwards.

We will now examine the dyed sample. The best method of dyeing this kind of material is by the jig method. The goods are wound on a roll of say five or six pieces of 120 yards to the piece. An end cloth is sewed on each end to save remnants and cut down the seconds. These rolls are then put on the jigs and the end cloth passed under the rollers in the dye bath. They are fastened on the roller on the other side. When the bath is prepared and raised to the proper temperature, the jig is set in motion and the cloth winds off one roller, passing through

the dye liquor and onto the roller on the other side. When the roller is empty the jig is reversed and the cloth wound back again onto the roller just emptied and so the process is repeated until the desired shade is obtained. In dyeing this material samples should be cut out at intervals near a seam to see if the desired shade is obtained, or if the bath is spent and needs replenishing.

After the dyeing process and the goods have had their final wash finish them along with the white goods. Alpha.

SIZING IN YARN FOR TURKISH TOWELS

Editor Textile World Record:

How much is added to the weight of Turkish towel yarn during the sizing process? How much is reduced from the weight when the yarn is bleached? How much when towels bleached?

Romanova (2331).

The increase in the weight of yarn during sizing is not uniform. The increase depends on the mixture and consistency of the sizing solution as well as the material; the setting of the sizing or slashing machine also has a bearing on the question. The weight can be materially increased by adding weighting materials to the sizing solution, such as chloride of zinc, Epsom salts, sulphate of lead, barytes and even plaster of Paris. Weight gained in this way is lost in the bleaching process.

A fine, hard twisted yarn will not absorb as much size as a coarse yarn with less twist. If "Romanover" will weigh a few hanks of yarn before and after sizing the gain will be disclosed. The yarn for a good quality of Turkish toweling should gain about 8 per cent. in weight or perhaps a little more according to the setting of the machine. When the yarn is bleached it will probably lose from 4 to 6 per cent., depending on the process. There is a gain of 1 to 1 1/4 per cent. between the sizing and after bleaching, allowing for the waste. This applies to the bleaching of the towels after weaving. An excessive loss between the yarn and the finished towel may be caused by overbleaching. The weight of the towels is sometimes increased by starching or other methods of weighting. Turkish towels woven from the bleached yarn will yield more seconds than towels that are woven in the grey and then bleached, as towels from bleached yarn are liable to get dirty in the process. If woven from the grey yarn and then bleached the goods will have the dirt bleached out.

Dulcimer.

DEFECT IN COTTON PLUSH

Editor Textile World Record:

I enclose sample of cotton plush shown at Fig. 1, in which the pile pushes out of the back. You can see that by pushing hard on the pile with the thumb or scratching the back of the fabric with the finger nail the pile can be worked out. This

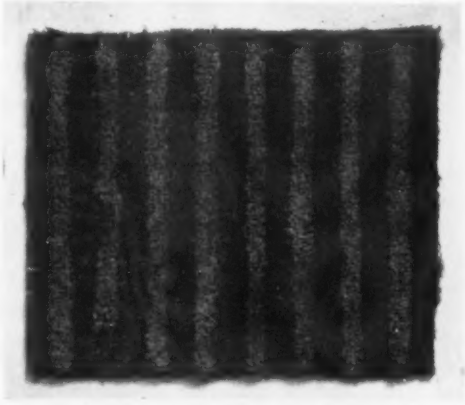


FIG. 1. A COTTON PLUSH SHOWING DEFECTS

is done in wearing and will show a bald spot. I would like to know of some substance that can be applied to the back of the fabric to stop the pile pushing through. It should add little weight, be flexible and of such a nature that it can be applied evenly and mechanically.

Fairmount (2303).

Our French correspondent replies as follows:

Fig. 2 is a longitudinal section of a velvet fabric woven double and cut apart on the loom. Fig. 3 shows the weave used for this cloth. The goods can be woven with one shuttle used alternately for each piece, or it can be woven with two shuttles operated simultaneously. The velour is finished by shearing with a shaped rest to make the pile shorter where the cloth does not come in contact with the shear blade. The top of the higher tufts are then printed to give the light shade shown in the sample. As the pile warp is raised at every pick, as shown at Fig. 2, the texture lacks firmness

and as a result the pile can be loosened by scratching or pressing the back. This defect can be corrected by sizing the goods so as to fasten the pile to the filling. The sizing mixture is made up as follows:

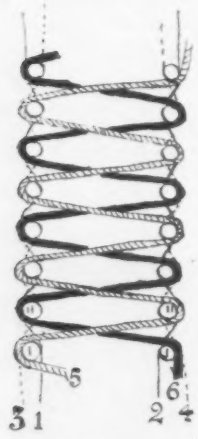


FIG. 2

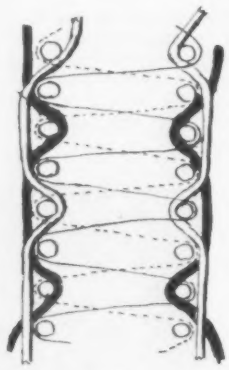


FIG. 4

50 parts soft glue, 35° Be.
12½ parts softening.
80 parts water.

This mixture should stand at 4° to 6° Be.

Figs. 4 and 5 illustrate a weave that is sometimes used for these goods in order to obtain a firm texture. A coarse warp thread is woven as shown, to float on the back and form a support for the pile, preventing the latter from becoming displaced by pressure or friction on the back of the goods.

Gaul.

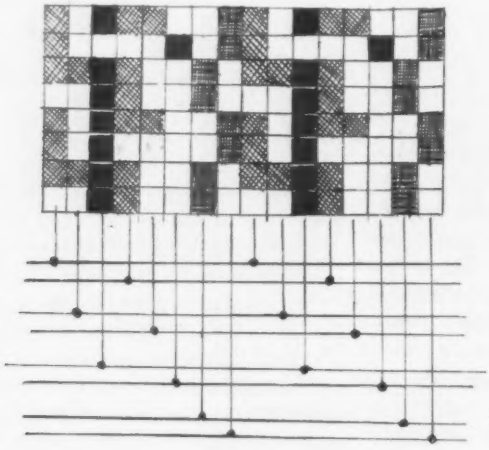


FIG. 5

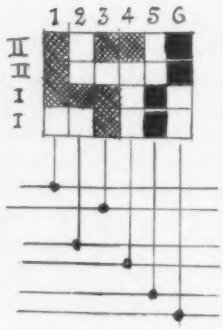


FIG. 3

DEWSBURY GOODS FOR TURKEY

Editor Textile World Record:

The Daily Consular and Trade Reports gives an account of contracts for wool goods to be made in Dewsbury, England, for the Turkish Army. I have always understood that Dewsbury goods contain very little, if any wool. Can you give me any information regarding the material used for the goods to be delivered on the Turkish contract? Blanco (2333).

We referred this inquiry to our English correspondent who replies as follows: The army cloths hitherto made here and in Germany for Turkish use have run 75 cents or more per yard and probably contain some waste along with sound crossbred wool. Some of the British army cloths contain waste and to my knowledge are carbonized in the piece to get rid of cotton. Some of the army authorities have imposing regulations against the use of skin wool, shoddy, etc., and the Roumanian specifications used to include clauses authorizing their agents to live and sleep in the mill to see that the rules were carried out. I know manufacturers who refused to tender for Roumania on these conditions and I cannot say that the rules were ever accepted. Cloths for many armies are or have been made in our heavy woolen district, and there are manufacturers like Mark Oldroyd & Son who use hardly any shoddy. Several use much more new wool than they did formerly, and make a more expensive class of goods. Manufacturers do not like dictation as to what they shall use or how they shall use it. The cus-

tomer's turn comes only with the completion of the goods and all the army contractors have to comply with is a pretty rigid regulation as to tensile strength. British deliveries to Turkey turned out a good deal better than German ones when buying was in progress a few years ago. Wessex.

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MANUFACTURING A LENO FABRIC

Editor Textile World Record:

We are enclosing sample of a leno fabric, which we would like to make. Is it necessary to have a special machine for making this material? Do you know of any other way of weaving it than with a double slackener? There is always more or less trouble with a double slackener and if we could find some arrangement that would be more reliable, we would like to know of one.

Manufacturer (2187).

The leno weave is used in the making of coarse laundry bags. When these bags were first made the cloth was woven about 40 inches wide single. They were then sewed into bag form. At that time we used the regular leno apparatus such as worsted or wire doups, double yoke and jumper and the

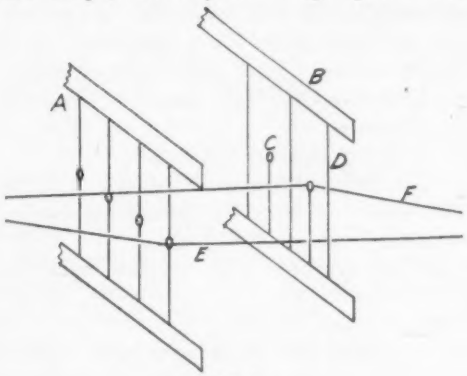


FIG. 1

regular easing motion, but satisfactory results were not obtained because of the heavy yarns that were used. It was almost impossible to get a clear shed at the crossing pick. I got much better results by the use of wire doups and bell crank levers connected to the easing rods. The bell crank lever is an L shaped lever, the shorter end being connected to the head, and the longer end with the easing rod lever. This lever gave not only increased slack to the yarn, but the slack occurred when required. There was no excessive slack yarn at the opening or closing of the shed, which is an objectionable feature with the ordinary easer motion. Even with the L shaped lever we had some trouble in getting satisfactory cloth. If I had continued in the laundry bag business I should have developed the old idea of split

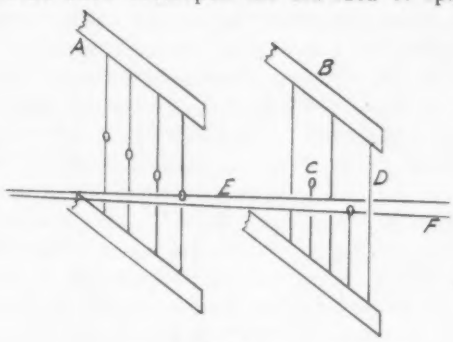


FIG. 2

reed or harness, or the needle motion similar to the lappet principle. I should have used these motions in connection with cams for operating the harness, as I believe more satisfactory results could be obtained by that method. I assume the sample submitted was used for laundry bags. The pattern would not be the same as the sample, which requires two doups, whereas the weave in the seamless bag is similar to the single doup weave.

Four harness are used in the making of these bags, first and second for face cloth, third and fourth for back cloth. As this is a leno weave, the first and third represent ground thread harness, sometimes called the standard harness; second and fourth, the crossing thread or leno harness. By the use of this motion doups are not required. Fig. 1 shows clearly the style of harness used in the weaving of these bags. The first and third might be classed as ordinary harness, the second and fourth resembles a harness and a half, although each alternate wire is plain, having no eyes in them. The half length wires placed alternately between the others are the ones through which the threads pass, they having holes at the upper end. It will readily be noticed that if a thread is drawn through the eye of the first harness, this thread passing between the half

harness and the plain wire in the second harness, and a thread through the eye of the half harness, it is possible to make the leno weave by giving a lateral motion to the half harness. This operation will be more clearly understood by glancing at the line drawings in which the operating of two harness only is shown. Fig. 1 is the ground thread harness; B, crossing thread harness; C, half harness; D, plain wire; E, ground thread; F, crossing thread. The ground thread harness would never raise to the top shed in the

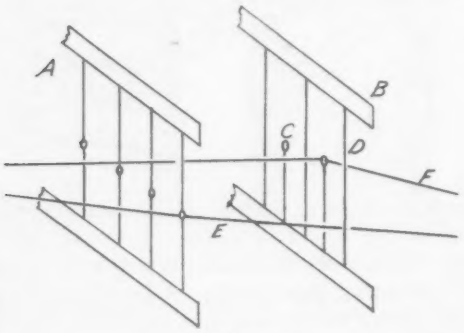


FIG. 3

formation of the weave, but the harness would be half raised. The lateral movement is given to the crossing thread harness, but in the weaving a bag all face threads are raised while a back pick is being placed in. The order of weaving is as follows: Supposing the ground thread in A is on the left if the thread through C, for the first pick, when the harness come to the center previous to the second pick, the half harness is moved to the left, Fig. 2, so that the ground thread passes over the top of the half harness. When the harness are geared for the next pick the ground thread will be to the right of the half harness as in Fig. 3. The lateral movement is given to the half harness by means of a scroll cam fixed on the pick cam shaft. This movement will not give the same weave as the sample, but the scroll cam and harness cams can be made and operated to give the weave desired.

Jean Paul.

The India jute crop season just ended has furnished 9,600,000 bales.

EQUIPMENT OF A SILK MILL

Editor Textile World Record:

I wish to determine the cost, machines necessary, and the capital required to equip and run a 200-loom silk mill, making about 92-96 pick work, one yard broad. Do you think it advisable or not to buy warps to begin with? How many people must I employ to operate such a mill?

Brodick (2334).

I will assume that "Brodick" will make plain skein-dyed goods, will house his plant in rented premises, and will buy electric power, and that the goods will be finished outside.

The following information is only approximate and would require modification according to circumstances. It would be hazardous in the extreme for any one to decide upon entering a field in which the competition is so fierce and the profits so small without taking competent advice on every phase of the question.

We start with 200 looms. The price will be modified according to the width, number of harnesses, number of beams, and whether they are plain or box looms, for if any box looms are needed they will cost more.

The cost of a good plain loom, together with a reasonable equipment of harness, reeds, shuttles, etc., might be set down as $200, making $40,000 for looms.

Next, there will be, perhaps, 600 winding spindles costing, say, $2 apiece, amounting to $1,200.

For the quilling, 280 spindles may be needed, which, at $5.50 a spindle, would come to $1,540.

For warping and beaming I may provide 10, 63-inch, horizontal warpers with Swiss motions, and with their pin creels. These will cost about $250 each, totalling $2,500.

It should be remarked, also, that the amount of warping, winding and quilling machinery needed is considerably controlled by the speeds of the looms and the quality of the silk used for warps. With high speeds and good silk the product will be large and a larger proportion of preparatory machinery will be needed.

There is wanted a folding and measuring machine, costing, say, $250, and machinery for the machine and carpenter shops might be set down as $1,000 more.

An electric motor of probably 50 to 60 h. p. will be needed, and the latter size would cost about $500, with, say, another $100 for accessories.

Next there is the transmission machinery (shafting, pulleys, etc.) to be provided and erected, which, with the belts, might come to $3,500, and the lighting equipment might make $1,500 more.

A large quantity of bobbins, swifts, spindles, boxes, paper, and countless other things, must be supplied, as well as the small equipment, scales, clocks, fire apparatus, tables, furniture, office equipment and what not, $4,000 may be set down for this.

The foregoing make a total of about $56,000.

Another large expense is the installation of machinery, including the freight and cartage, and the large sum that it costs in labor and expense in getting the mill going as it should. This will run into many thousands of dollars, but may be put down as $4,000.

This, with the machinery and equipment, brings the total machinery investment up to $60,000, or $300 a loom. If humidifying equipment is wanted, a further amount must be added.

As to the personnel, there are first the weavers, and, according as the mill runs 2, or 3, or 4 looms to the weaver, so will the number employed be 100, or 67, or 50.

There will be a foreman-warper, and a warper for each machine; a foreman-winder, and an operative for each 70 spindles, more or less; a foreman-quiller, and a girl to each 40 quiller spindles.

Then there might be a head loom-fixer and four regular fixers; two weave-room helpers; four or five twisters; ten pickers; two cleaners; one cloth examiner; one man in charge of the dye-silk stock room; one harness man; one shuttle and reed fixer; one night watchman, with extra man for Sundays and holidays; one sweeper and cleaner; one engineer, two machinists, and one carpenter; one man for the folding and measuring machine; one bookkeeper, and an assistant as shipping and stock-room clerk; one entry clerk for the piece-work, etc.; one stenographer; say, six boys or girls for sundry work; one designer; and one superintendent.

While the foregoing would need modification in most instances, it gives a general idea as to the character of the force required to operate such a plain-goods mill.

Outside of the weavers, the above adds up about 76, and, if two looms are run to the weaver, the total force will be about 176, but if fancy goods should be gone in for, materially more people will be needed.

Under average conditions of labor cost, the above might represent a weekly payroll of $2,000 to $2,500.

As to the capital required to run the mill, that is a very different thing, particularly if the mill is to be in such shape, all the time, that if the market needed fewer goods it would be able to stop looms, instead of having to keep them running for advances. A quick capital of at least $500 a loom should be provided if financing is done through a commission house, while, if one carried his own credits, $1,500 a loom would be none too much.

This is a matter that is universally underestimated, and most people start with grossly insufficient capital, and, in consequence, disaster is invited.

A mill of this size should turn out, of 94-pick goods, if running full all the time for 55 hours a week and with a loom speed of 140 picks a minute, about 1,000,000 yards of ordinary plain fabrics a year. At an average value of 65 cents a yard there is a turn-over of $650,000 annually. It requires a lot of money to swing such a business.

I would not advise buying warps outside at the outset, though "Broderick" could, if necessary, have warps made outside from his own dyed silk. Velour.

BLEACHING KNIT GOODS

Editor Textile World Record:

We are using sal soda for softening the water used in bleaching knit goods. The sal soda is very bulky as it contains about 60 per cent. of water. We want to obtain a substitute which will be equally or more economical and occupy less space. Wentworth (2330).

Ordinary crystal soda, the sal soda of commerce, has the following chemical composition:

Sodium oxide (Na O)	21.68%
Carbon dioxide (CO)	15.39
Water	62.93
	100.00

Of all the commercial alkalies, this has the greatest amount of water to be considered, and where this item is to be taken into account, is a matter of some importance. The next carbonated alkali of interest is known as sodium monohydrate crystals, but is generally sold to mills under various fanciful names so as to hide the identity of the substance. Compared with the ordinary sal soda which contains water equal to nearly 63 per cent., the monohydrate, as its name implies, contains much less, in fact only 14.52 per cent., and consequently is much richer in softening and detergent qualities. The chemical composition of the monohydrate is as follows:

Sodium oxide (Na O)	50.00%
Carbon dioxide	35.48
Water	14.52
	100.00

Soda ash, the commonest of all the carbonated alkalies, and the one against which all the others are compared, is much employed in the textile industry for scouring, water softening, and other purposes, but it has, owing to some impurities that cannot be removed, certain objectional features that interfere with its extended use for certain lines of work. The composition is as follows:

Sodium oxide (Na O)	58.49%
Carbon dioxide	41.51
	100.00

Thus while soda ash has no water, and is otherwise the "strongest" alkali to use for the purpose indicated by this correspondent, yet the best that can be recommended is to use the sodium monohydrate crystals, which is not a mixture of other alkalies, but is a definite chemical compound, the composition of which varies so little that it can only be ascertained by the most careful chemical analysis.

On the other hand, where knit goods are to be handled, the mildest alkalies are alone to be considered, and the use of the monohydrate is suggested for the purpose. As it is not the sole product of any one manufacturer, and is made and sold in all countries, no difficulty is experienced in getting it.

Comparing the several products above named, according to their efficiency and water content, we find that 100 pounds of soda ash equals 117 pounds of the monohydrate of soda, or 270 pounds of ordinary sal soda. It is thus seen that for reasons of economy the monohydrate is the most satisfactory to use. Berwick.

STAINS ON KNIT GOODS

Editor Textile World Record:

We are enclosing a piece of knit goods showing brown stains. These stains get on the goods for only one or two pieces directly on the top in the kier. The kier has outside vomit pipes which connect to a perforated pipe in top inside, which distributes the liquor over the goods. We use a solution of 22 lbs. caustic soda, 15 lbs. concentrated ash and 10 lbs. chip soap to boil 1,400 lbs. goods for 7 1/2 hours. We rinse our goods twice with fresh water from the top. Please advise what is the cause of these spots and what to do to prevent them. Croydon (2242).

The stains on the samples submitted may be caused by soap chips being cut in the boiling process and the residue of fat and dirt percolating through the blow pipe, leaving the sediment on the goods on the top of the kier. This is one cause of the stains. Another possible cause is dirty kiers, and not too clean water, with possibly dirty boilers. This is indicated by the fact that the stains appear only on the top of the kier. I had the same trouble a few years ago in a piece bleaching plant. I would advise "Croydon" to watch each kier as it comes out, and to use the following method: First, whitewash the kiers with a strong solution of lime wash. This should be repeated after every boiling if the stains keep appearing. Second, cut out the soap chips, increase the caustic soda to 25 pounds, the soda ash to 20 pounds and boil the same length of time. If the goods come out harsh, make a solution of soap liquor and pass the goods through the machine with about 20 pounds of solution to 100 gallons of water, adding a little blueing to heighten the white. This will give the goods a softer feel than if they were boiled with the soap chips. Third, see that the goods are covered with burlap or sacking in the kier and properly weighted to hold the sacking down. Fourth, if any compound is to be used in the boilers, or any chemical for purifying the water, see if the quantity can be reduced to help keep down the scum in the boiling. If the above directions are carefully followed I am quite sure all stains will disappear. Dulcimer.

Knitting Department

THE KNIT GOODS SITUATION

The greater part of the buying of Spring weight underwear for 1915 has been completed. The buyers from the larger Western houses have all been in the market and there yet remains only the representatives of some of the smaller concerns to be heard from.

A careful resume of the orders placed indicate that the buyers have proceeded with more caution in the placing of Spring orders than for several seasons past. There appears to be a tendency on the part of many of them to cut down a number of lines and also to reduce the quantities on the styles they have placed orders on. They certainly are not operating as freely as in other years and as a consequence, many manufacturers have started their representatives out again in the hopes of getting their sales up to last season's figures.

A noticeable feature in the placing of spring orders is that most buyers are now adopting the plan of not placing orders until after samples have been sent to their local offices for comparison with other lines. The general mode of procedure is for the buyer to spend about half of his stay in the market, looking over lines and selecting samples to be sent in and then taking the other half of his time in comparing samples and making out the orders which are usually mailed on the last day of the visit.

Several jobbers have reported that a large percentage of the stock of summer weights that is being carried over consists of straight ribbed vests and in looking over the new orders placed for spring, this fact is quite apparent. The mills making only this class of merchandise are all open for considerable more business to take up their production The Amazon Knitting Co. of Muskegon. Mich. are one of the larger, if not the largest mill on this class of goods and their prices for next season are the same as for 1914 and it is believed that their output has been well contracted for.

It is understood that the owners of the Cumfy Cut patents have agreed to take about one-third of the production of Amazon Knitting Co., which accounts in a measure for their sold up condition.

The demand for garments made with the Cant Come Off shoulder feature has increased considerably of late and some other manufacturers are making similar garments. E. Emmers & Co. of Royersford, Pa. have a line made under the name of E-Cut, and the National Underwear Co. also make a line under the name of Setwell for which the same advantages are claimed as for the Cumfy Cut, namely, that the neck openings are so shaped that the shoulder straps will stay on the shoulders.

Boyce, Wheeler & Boyce, the owners of the Cumfy Cut patents, have apparently felt competition on their lines and for next season are showing one garment at 67 1/2 cents, but which they put out without the Cumfy Cut packing.

Another noticeable change observed in placing of 1915 business is that the trade are taking very liberally of straight ribbed vests made with V cut necks, instead of square cut that has been in favor so long. This is probably accounted for from the fact that the prevailing styles of waists and gowns are made with low neck opening brought down to a point.

The 1 by 1 stitch fabric in straight ribbed vests is being taken very freely and although there is less elasticity than there is in the 2 by 2 stitch, the appearance is so much finer that they are supplanting the other lines in many places. This cloth is being shown as low as 75 cents per dozen and at 85 cents some very attractive garments are made with pearl edge and picot trimming. At $1.60 to $1.85 combed yarns are being used and many orders have been placed for them in both ordinary and extra size lines to retail at 25 cents. Some samples of 1 by 1 fabric in mercerized yarns are being shown to

retail at 50 cents, but buyers generally have not selected these styles, but placed their orders on lines made on Swiss machinery in lisle and mercerized fabrics for 50 cent qualities.

While the larger volume of sales of straight vests are on plain trimmed lines, yet jobbers find it necessary to show an assortment of fancy trimmed vests at popular prices and we have been told that the lines of fancies for next season are not as attractive as in former years. There seems to be a scarcity of fancy trims and insets at popular prices. There are only very few styles available at 85 to 95 cents which constitutes a popular range of prices at which jobbers seek to operate.

There also seems to be a scarcity of real good designs with hand crocheted yokes at $3.50 to $3.75 and the range of 25 cent fancies is also quite limited. Possibly manufacturers have found that this class of goods is bought in such small quantities that it does not pay to give much attention to it and are, therefore, devoting their efforts to plain trimmed lines which are bought in larger quantities.

It is also reported that there is a scarcity of plain trimmed mercerized vests in ordinary and extra sizes to retail at 25 cents and there are those who think that underwear manufacturers generally are not making the progress they should in getting up underwear made either of real or artificial silk for women to wear with the silk and fiber hosiery that is now so popular.

Jobbers report that since July first orders for fall goods are coming in a little more freely.

Retailers are not buying large quantities, but there seems to be a desire on the part of many small sellers especially, to look up their stocks and fill in sizes required which is particularly gratifying, after the long spell of inactivity on these lines.

HOSIERY

Prices at which hosiery lines opened for spring, 1915, showed that it was essentially a buyer's market; nevertheless, orders have not been placed in the large quantities that the prices would warrant, although every buyer must know that after taking the cotton market and the high cost of production into account, that the prices would undoubtedly be higher, rather than lower. In fact, many manufacturers are only waiting until they have booked a certain percentage of their production before putting up their prices where they will show a profit.

Quotations on women's and children's low grade hosiery are very low, in fact, lower than the opening prices for spring, 1914.

There is very little in the way of new ideas being shown and indeed, about the only lines where a change is apparent is in the silk and fiber silk numbers. These have either been improved at the old prices or lowered in price. A very notable item is the all fiber sock and stocking, namely, wood silk without any mixture of cotton and silk. These by many are held to be very unworthy merchandise and prophecies are ripe that they will hardly survive the year. However, these are being bought in very large quantities and it will be interesting to watch the outcome. Should they prove satisfactory and be practicable, it will mean a revolution in the hosiery industry. The inroad made by this class of merchandise is being felt very keenly by makers of seamless lisles, so much so that mercerized seamless lisles for women and men may be bought at almost any old price where quantities are on hand.

Indications are that colors will be good another year and there seems to be little, if any let up in the demand for white hose. Tans are very slow and promise to remain so for another year.

An effort is apparent to introduce something in novelty effects in silk goods to retail at $1.00 and upward. These are in the way of Persian and Roman stripes around the welt, boot or the ankle. Some are being shown in an all Persian boot and black top; also colored boots and colored tops in contrasting colors, but are only taken in a very gingerly manner. The time is hardly ripe for any volume of business on anything except staples, although manufacturers and merchants would welcome the return to fan-

cies and novelties of some sort where the profits would be a little better.

Clockings have been very popular this year and manufacturers are bringing them out in cheaper grades for the coming season. These are more promising for business than the novelties. Some laces are being bought in certain sections in German made goods, but in very moderate quantities. They are also showing several styles of Paris clocks at prices to retail at 75 cents and upward.

The craze for silk stockings is proving an insurmountable barrier for the German manufacturers and leave the field almost open to the domestic manufacturers.

It is rumored that there are large quantities of German lisles unsold in the market.

Children's fancy socks of German make are being bought in large quantities, the Tariff making it possible for this class of goods to be brought in at popular prices.

Among the latest novelties in silk hosiery are black and white with bone or crocheted buttons sewed on the instep, but these are in high priced goods, retailing at $3.00 and up.

SWEATER COAT SIZES

A committee of the Jobbers' Association of Knit Fabric Buyers, which has been investigating the question of standardizing sweater coat sizes, made a report at the recent meeting of the association in New York, and recommended that the following sizes be adopted by the trade:

Men's Sweater Coats

Chest Inches	Width Inches	Length Inches	Sleeve Inches
34	15½	26	20
36	16½	27	20
38	17½	28	21
40	18½	28	21
42	19½	28	21
44	20½	29	22
46	21½	29	22

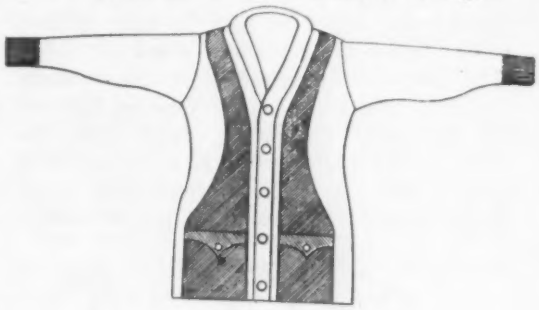
Boys' Sweater Coats

Chest Inches	Width Inches	Length Inches	Sleeve Inches
24	11	18	13
26	12	19	15
28	13	20	16
30	14	21	17
32	15	22	18
34	16	24	19

A MEN'S JERSEY HUNTING COAT

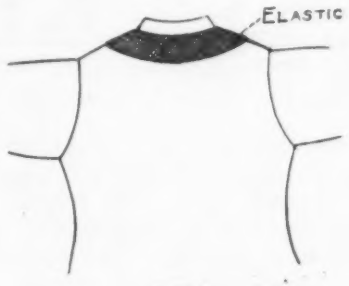
BY CARDIGAN

The Jersey hunting coat is a very neat appearing, serviceable coat, and well adapted for carrying shot and cartridges. At the same time it adds to the warmth of the wearer without being too heavy. As a gen-



FRONT VIEW

eral rule, this coat is made in oxford, tan or olive drab, and invariably of worsted. The following sizes of yarn and cuts of machines are suited for this garment: 2/13 cut on an 8 cut machine and 16 stitches to the inch, and 2/18 cut on an 11 cut machine 20 stitches to the inch. These sizes of yarn

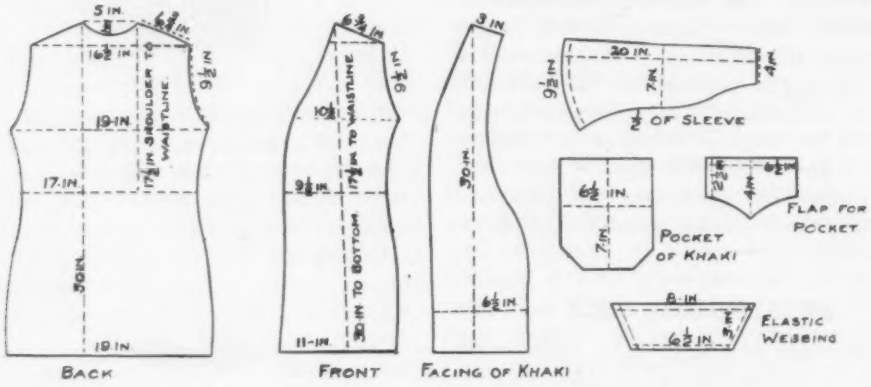


BACK.

make a very firm, durable garment. When made of 2/13 cut the garments will weigh about 16 pounds per dozen. If made of 2/18 cut they will weigh 16 3/4 pounds per dozen.

The first operation in making the coat is seaming the shoulders. The facing, which is made of either tan or olive drab khaki cloth is then sewed to the elastic web, which is about 3 inches wide and has a selvage edge on each side. The center of the elastic is pinned to the center back of the coat and

stitched down. After the facing and elastic are stitched, the pocket and flap, which are also of khaki, are sewed on. The pocket is made to close with a button and buttonhole. The facing keeps the front of the coat from sagging, while the elastic in the shoulders keeps the coat from cutting into the shoulders and helps to preserve its shape. The sleeves are sewed in and the coat is then sewed under the arms and down the sides. The cuff, which is sewed on double, is made on a 12-cut machine and is 3 inches long on the garment. The facing, which holds the buttons and buttonholes, is made about 4 inches wide on a flat machine with a 24 gauge needle. This facing is put on with a special binding machine. The buttonholes are then put in and the buttons, which are 36 line, are sewed on. The coat is then steamed and pressed on an underwear press and is ready for packing. They are sold to the trade for about $27.00 per dozen.



PATTERNS FOR A JERSEY HUNTING COAT

At the recent meeting of the International Cotton Federation held in Paris recently it was announced that the increase in the production of cotton in India had been from 250,000 to 600,000 bales.

The importation of hosiery into the United States during the month of February, 1914, was 40 1/2 per cent. greater than it was in 1913. The imports of all other knit goods outside of hosiery was 677 per cent. greater than in 1913.

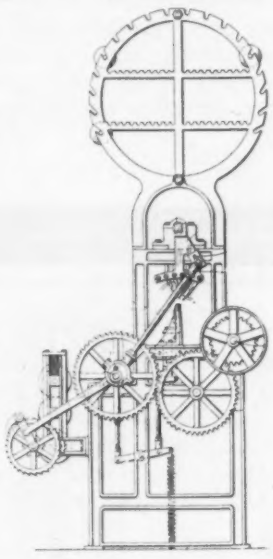
AN EMBROIDERY KNITTING MACHINE

The illustration shows a section of a knitting machine, recently patented in this country for knitting embroidery or edging used for trimming underwear, which is knit by needles carried by a reciprocating needle bar and a number of thread guides automatically adjusted to carry the yarn into and out of position in accordance with the pattern. In the well known type of machine for this purpose the different sets of yarn or thread guides are carried by slides mounted in a rocking frame. The axis of rotation of the rocking frame, and the direction in which the slides move are parallel to the length of the needle bar. The rocking frame is oscillated in timed relation to the reciprocating movements of the needle bar, and pattern chains or the like are employed to reciprocate the yarn guide carrying slides in the rocking frame as required to produce the desired pattern.

The improvement consists in an arrangement of the means employed for imparting the oscillatory movements to the rocking frame devised with the object in view of effecting the rocking movements so as to permit a higher speed of operation than has heretofore been obtainable with machines of this character.

The illustration shows an end elevation of the machine. It comprises a frame standard formed with guideways for the vertical reciprocating needle bar carrying the usual

knitting needles. The needle bar is given its up and down movements by means of cams carried by the main operating shaft of the machine, links and rocking arms. Each of the rocking arms is pivoted between its ends to the corresponding frame standard. The links are each formed with a slot receiving the shaft and have journaled to them rolls engaging the top and bottom sides respectively of the corresponding cam. The upper end of each link is pivotally connected, in the particular construction shown, to a yoke secured to a corresponding projection from



AN EMBROIDERY KNITTING MACHINE

the needle bar. Each of the links is formed in sections so that the effective length of each link may be varied.

A spring is connected to each lever or rocking arm in such manner that its tension supplements the weight of the needle bar, tending to hold the rolls firmly against the corresponding cams and thus avoid lost motion. As shown, the shaft has secured to it at one end a spur gear meshing with an idler gear, which in turn meshes with a gear carried by the belt driven driving shaft. The thread or yarn guides are arranged in sets, each set being carried by a corresponding slide. The slides are mounted in a rocking frame comprising a squared rocking shaft and hangers. Each slide is connected at one end of the machine by a tie or connecting rod to one end of a corresponding bell crank lever, the other arm of which carries a roll which bears against a corresponding pattern chain. Each pattern chain runs over and is moved in timed relation to the movements of the needle bar by a corresponding gear carried by a shaft. The shaft is driven by the shaft through bevel gears. The sprocket gears over which the pattern chains run are secured to the shaft. At the opposite end of the machine a bracket is attached to the shaft. One end of each of a series of tension springs is secured to the bracket. Each tension spring, P, is connected at its other end to a corresponding thread guide slide, H, and tends to hold the latter at the right hand limit of its movement.

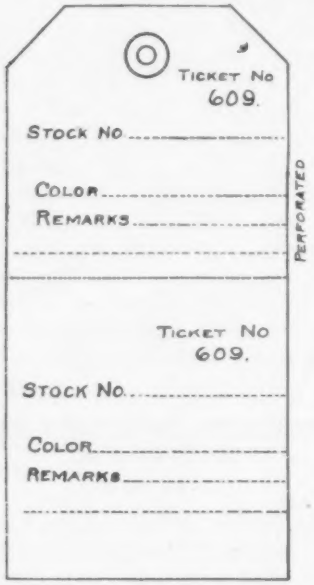
A SYSTEMATIC INVENTORY FOR A KNITTING MILL

BY HONEOYE

Although most manufacturers keep what is known as a perpetual invoice, it becomes necessary at least once a year to take a complete invoice of all stock. The perpetual invoice is very good as it lets the manufacturer know at all times approximately how much stock he has on hand. The perpetual invoice is kept by means of stock records and requisitions. Whenever an operator uses anything from stock a requisition for the amount is made out. These requisitions are turned in at the office each day and the amounts are deducted from the stock records. Wherever the perpetual invoice is kept it is advisable to have different records for each class of goods. It is also advisable to have a merchandise number for all materials. As goods are received they are added to the records by the stock keeper.

This invoice has been found very useful to the buyer and manufacturer, as they can readily see where all materials are going and can tell if too much is being used in the manufacture of his product. The manufacturer who does not keep a perpetual invoice is behind the times and is an easy prey for dishonest operators. The perpetual invoice

can be kept nearly exact, but it is advisable to take an inventory once or twice a year. An easy and systematic way of taking an exact inventory is by means of tickets like that shown in the illustration. This ticket is



TICKET USED FOR TAKING AN INVENTORY

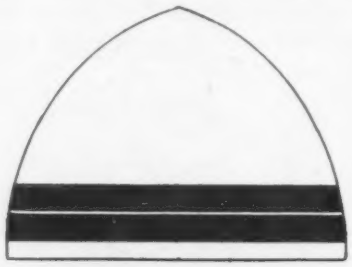
made in two parts, one being a duplicate of the other. They are all numbered consecutively so that no two numbers are alike.

The heads of the departments fill the tickets out accurately and attach them to the different articles of merchandise. After everything has been tagged the superintendent or manager gathers up the lower half of the tickets, leaving the upper half attached. The tickets are then sorted in rotation to make sure that none is lost. They are then entered in the stock records. This gives an accurate and speedy invoice and also leaves each piece of merchandise tagged for the benefit of the operators.

A BATHING CAP

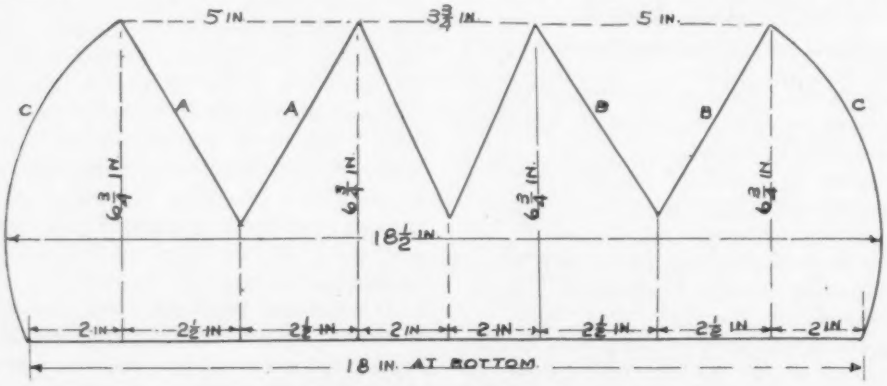
BY HAWICK

One of the many novelties of knit wearing apparel which is rapidly gaining in popularity is the bathing cap. As a general rule they are made to match the suit and to fit



A BATHING CAP

close to the head. They serve the purpose of keeping the hair out of the eyes, besides adding to the appearance of the wearer. The illustrations show a cap and the patterns used in making it. The lines, A, are joined, also the lines, B. The lines, C, are then sewed and this closes the cap, which is hemmed and inspected. The making of these caps also affords a means of using up remnants of cloth which are invariably left in making bathing suits. These caps sell in



PATTERN FOR A BATHING CAP

coton for $1.00 per dozen, and in worsted for from $1.75 to $3.00. The worsted caps will weigh from 7 to 9 ounces per dozen; the cotton will weigh from 6 to 8 ounces per dozen.

AN IMPROVED KNITTING MECHANISM

The needle shown in the illustrations has recently been patented and is described by the inventor as follows: The needle is designed to take the place of the latch needle and the machine in which it is used. The latch needle with its pivoted latch is open to serious defects inherent in its construction and operation owing to the minute character of the pivotal joint, the continuous swinging of the latch on the pivot, the non-positive action of the latch, the extent of movement of the needle required to form the stitch, and for other reasons familiar to those skilled in this art.

The present invention presents a machine and a needle in which the needle is made up of two separate members, one formed to present the usual hook, and the other performing the functions of the usual latch. These parts are positively actuated to cause the co-operation of the latch with the hook to cover and uncover the hook at the proper time. The movements being positive and the construction being exceedingly simple and strong in principle remedies the defects in and the objections to the pivoted latch needle. The device is adapted to existing knitting machines, requiring but slight alteration.

Fig. 1 is a cross section of the upper portion of the needle and cam cylinders of an ordinary type of plain circular knitting machine, showing a needle in position; Fig. 2 is a side view, and Fig. 3 a rear elevation of the latch member; Fig. 4 is a view in cross section of the needle cylinder showing the needle in position with the hook member partially in cross section; Fig. 5 shows the needle in depressed position; Fig. 6 is a cross section of the upper end of the hook member. The improved needle is adapted to replace the ordinary pivoted latch needle in any form of machine where the latter is used.

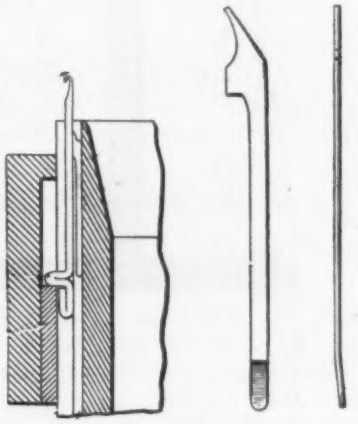


FIG. 1 FIG. 2 FIG. 3

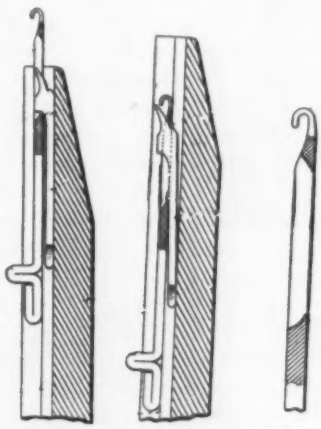


FIG. 4 FIG. 5 FIG. 6

OIL STAINS IN KNIT GOODS

Editor Textile World Record:

We have great difficulty in cleaning stoved yarns, from black, greasy oil stains. As you are aware, latch needle knitting machines, even with the best of care, are sometimes greasy in the tricks, consequently black stripes occur in the white goods. We have tried all kinds of cleaning liquids but have not found anything that will not injure the appearance of the garment. We would thank you to give us a suggestion as to how to get the best results in cleaning stoved goods. We think an article on knit goods cleaning would be of especial interest. Kaulas (2332).

I know of no process that will take out oil streaks and not injure the goods. When I came to my present position we did not dare oil the needles in the circular latch needle frames for fear of getting oil on the

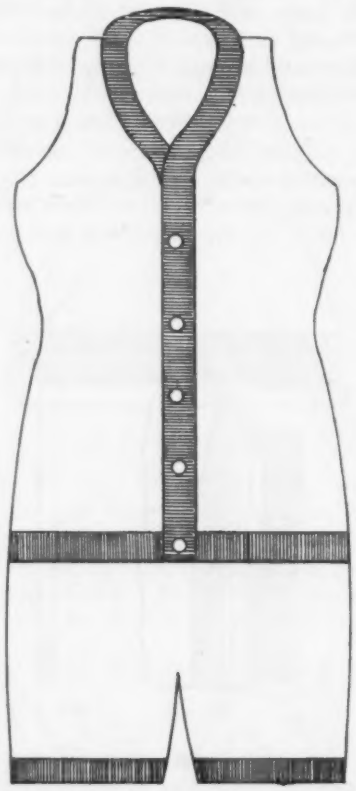
goods. Sometimes these streaks would run for half a roll. As we used expensive yarn this caused considerable loss. We could not even wash out the streaks with oil, using a cheap cotton yarn. By washing out I mean throwing oil around the cylinder and dial until clean cloth comes down. Even after washing the goods would show faint streaks all through the roll. We tried everything from vaseline to stainless oil, so called.

Some years ago certain machines had a space behind the needles in the old brass cylinders. One day as I sat in front of an old 17-inch, I happened to think of it and following the same line of thought, remembered how waste used to pack behind the needles of the cylinder, but did not remember our having much trouble with oil streaks. I decided to try out my idea and with the approval of the machine builder I had the frame changed over. I took a 17-inch cylinder to a local machine shop and had the space below the sinkers and above the slot walls cut out, giving a clearance of about 1/16 of an inch between the back of needles and cylinder. This was a particular job for an outsider to do so I stood over the machinist, saw that he used a sharp-pointed tool to cut away around the sinkers, leaving the bottom of the sinkers clear and smooth. He also used the same tool around the top of the slop walls, being careful not to touch the walls. When taken out of the lathe a slot file and brush was used to clean out the slots, getting all grits and chips out, and trying with a needle to see if it worked easily. I put the cylinder back in the frame and when ready to run threw oil all around the cylinder and dial. The cloth came down black, but by washing out several times in the same way the accumulation of different oils and lubricants in the needles and cylinder began to disappear and the fabric came down clear. The following day I changed to a cheap yarn again, washed it out, but no streaks appeared. Today those frames can be oiled at any time or place and no black will show, nothing but the oil appears. Sometimes the oil can be wrung out of the cloth, but never after the first yard.

Trenton.

MEN'S COAT STYLE BATHING SUITS

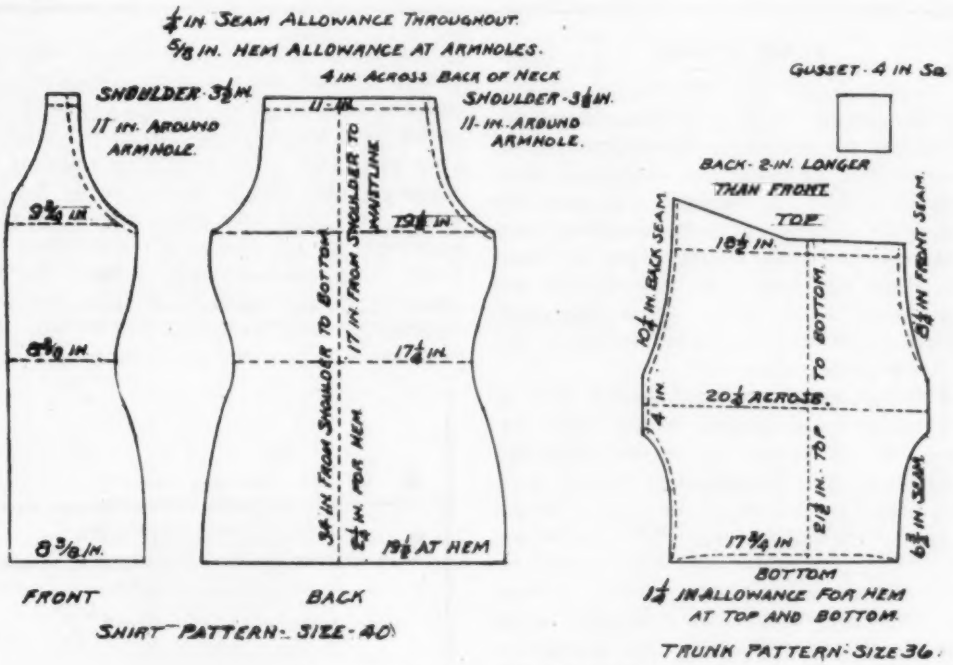
The coat style bathing suit for men, which is very attractive, is no doubt the most convenient suit made. As a general rule it is made of worsted with a knit stripe; a few styles have trimming sewed on the bottom and around the arm-holes. These suits usually sell to the trade for from $15 to $24 per



COAT STYLE BATHING SUIT.

dozen. The trunks are made the same as in other suits, while the shirt is made on the order of a jersey coat without sleeves, with the exception that the facing around the neck and front is narrower. Patterns with measurements for this garment are shown at Fig. 1. As a general rule it is found rather difficult to get a shirt off after coming out of the water as they cling to the skin when wet. The coat style suit does away with this as the shirt opens down the front

and slips off just like a coat. This feature has made the style very popular. The facing around the neck and down the front holds the buttons and button holes and serves as trimming. The facing is usually sewed on with a special machine adapted for this work. Cardigan.



PATTERN FOR A ONE-PIECE BATHING SUIT

MANUFACTURING KNIT BOOTS

Editor Textile World Record:

Kindly give me as much information as possible regarding the enclosed knit boot, shown in the illustration; how it is made, on what kind of a machine, etc. Mackie (2265).

These goods are made on a cross cut circular latch needle machine driven by power on the cylindrical portion of the work and by hand on the heel and toe. The shaping is done by transferring the stitches by means of a hand rack. The toe is closed on the machine. The machine must be large enough to allow for the considerable shrinkage of the boot in the felting process. This shrinkage, of course, depends on the kind of material used. I understand that 3/4 automatic machines were used for making these boots some years ago, but the method I have described is employed by a number of up-to-date mills. Ernest Tompkins.

A KNIT BOOT

Dyeing, Bleaching, Finishing, Etc.

FOAM DYEING

BY CULEBRA

Foam dyeing is not a modern invention, but it has perhaps never been practiced to the extent it deserves. A Bohemian dyer, Conrad Wanke, of Zwickau, hit upon the plan in the days when dyeing machinery had every possible fault; pretty nearly all available plant was expensive, complicated and imperfect. Like many other inventors Wanke made little out of his discovery and he never patented it.

Although as we have said there is nothing new about foam dyeing, it has been discussed in silk dyeing circles since Schmid's degumming process has been largely used. This process is based on the same principle as foam dyeing, the soap bubbles alone are allowed to act on the silk and quickly remove the gum. Special machinery is made for this process and we have heard it stated that special plant is also at the disposition of the foam dyer. If this be so the makers hide their light under a bushel for it is certainly not advertised.

When the process attracted my attention more than fifteen years ago I found it a simple matter to rig up an apparatus for the work we then wanted to do, i. e., to dye light and medium shades on thin cotton material. A vat with a perforated false bottom is all that is required, the only difference to the ordinary article of this description being that the grid should be fixed much higher in the vat than usual. It is convenient to have a pretty deep vat in order to allow room for the goods. Fig. 1 shows the idea. A is the false bottom or grid; B, the level of the liquor in the bath; C, a perforated steam pipe.

It is important that the goods should not be touched by the liquor of the bath, but only by the foam. The level of the liquor, B, kept appreciably below the grid, A. Open steam is used for two reasons, the loss by evaporation of the bath, rather excessive in this foaming process, is replaced and the steam jet acts as a rouser. It would be inconvenient to have an agitator and the steam does the work of stirring up a lather very efficiently. The apparatus requires no driving power and is always ready for action. For light and medium shades it is excellent, for full shades it takes rather too long. The process is not suitable for the garment dyeing trade as it does not give satisfactory results on wool and unions. My experience is confined to ordinary and mer-

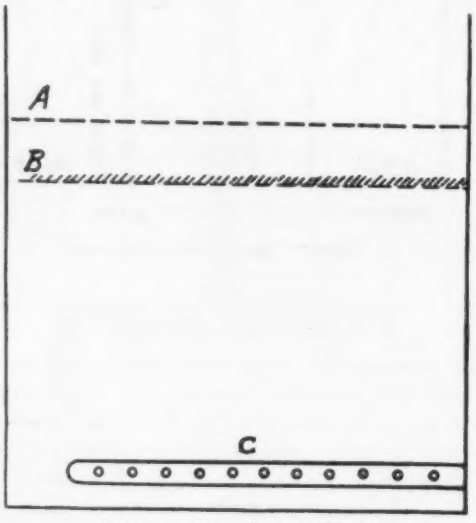


FIG. 1. A VAT FOR FOAM DYEING

cerized cotton, but I have heard of light silks being dyed in this way. On these goods very level shades are obtained but the foam is naturally considerably below boiling temperature; this alone prevents it being used for woolens. There is also the consideration of the alkalinity of the foam and the general unsuitability of wool dyes for the process.

For the bath distilled water alone must be used. This is fairly obvious as the formation of lime soap with the inevitable spotting of the goods with particles carried up by the foam would cause trouble. The dye-

stuff should be soluble and must be added to the bath in a perfect state of solution, otherwise specks of color will be thrown on the goods. My experience is limited to the direct cotton and sulphur colors. If a sufficiently soluble sulphur color is chosen the foam bath gives a cheap and handy method for dyeing yarn. The bath is foamed by the addition of Turkey red oil and a little soda. Care must be taken not to add too much soda, otherwise the foam will not burst. For dark shades no addition is necessary beyond the ordinary ingredients of a sulphur dye bath as the strong solutions froth sufficiently on boiling. Light shades will take half an hour, full shades may require nearly two hours. There is no more difficulty in dyeing to shade than with any other process. An ingenious adaptation of the process has been practiced with success in Turkey red dyeing. The goods are dyed as usual in the bath, then more Turkey red oil is added. The goods are placed on a grid over the surface of the bath as in foam dyeing and brightened in the foam of the bath. A very bright color is obtained in this way.

One of the most important applications of foam dyeing is for cops and cross spools, the method being particularly suitable for small establishments or where cop dyeing is not an every day affair. The apparatus used is a closed cylinder. The foam is at a higher temperature and the action of the steam also plays a part. The goods are packed on a grid above the dye liquor and it is important that they should not come into actual contact with it. Soap or Turkey red oil is added to the bath. The bubbles in bursting quickly penetrate the cop. If the right shade is quickly hit upon the output is fair, but the cost of steam makes the process more expensive than work with the first class cop dyeing machines now on the market. A cop should be completely wound off in each batch to make sure that penetration is complete.

The degumming process of J. P. & J. Schmid, two patents for which were taken out in the United States, Germany and England in 1905 and 1907, is evidently based on Wanke's invention. Figs. 2 and 3 are vertical sections of the apparatus, patented in

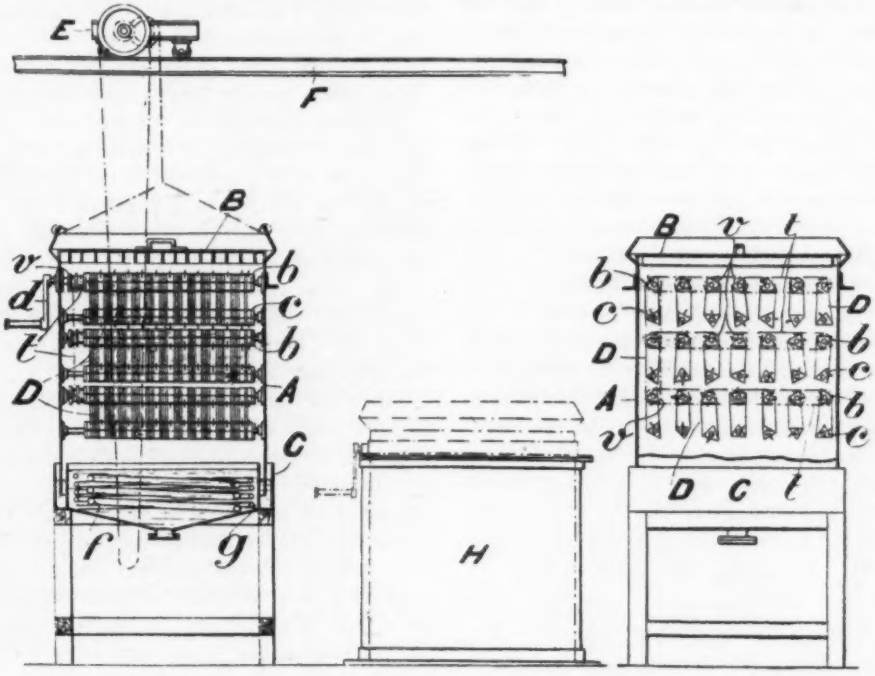


FIG. 2 FIG. 3

VERTICAL SECTIONS OF THE FOAM DYEING APPARATUS

1905 and it seems as if it could just as well be used for dyeing as degumming. A is a metal casing, the lower edges of which dip into the liquid in the double wall of the vessel, C, which contains soapy water. The cover, B, is not closed with a tight joint. The hanks, D, are hung as shown with mechanism for rotating them. The liquor in C is heated with a closed serpentine, f, but there is an air injector, g. This is perhaps a better arrangement than the open steam pipe. H is a washing apparatus.

For ungumming 100 pounds of raw silk the hanks are suspended as indicated by the full lines in Figs. 2 and 3 over the vessel, C, containing about 580 pounds of water in which 33 pounds of soap have been dissolved. Steam through the coil, f, brings the soapy water to the boiling point and air is admitted under pressure through the coil, g. The soapy water on reaching boiling point passes into a state of lather. This rises in the casing over the hanks so that they are subjected to the combined action of steam, hot air and soap lather. In about 35 minutes the sericin envelope is sufficiently softened and rendered soluble. The casing, A, is then lifted from the vessel by the windlass, E, and brought over the vessel, H, and the casing descends over this vessel as indicated in dotted lines in Fig. 2. The hanks are then caused to turn in the water in the vessel, H, by turning the crank handle, d. By this first washing bath about four-fifths of the sericin envelope will be removed. The removal can be completed by a second treatment above the vessel, C, followed by a second washing in the vessel, H. Very pure sericin solutions are thus obtained which can be ultimately employed for dyeing. The liquid remaining in the vessel, C, after the first treatment is reduced through loss of steam to about three-fifths of its former volume. It can be used for a further treatment of the same silk by adding about 230 to 240 pounds of water and about 16.5 to 22 pounds of soap, the quantity of soap to be employed varying with the nature of the raw silk to be treated.

SHODDY AND CARBONIZED WASTE

Louis Joseph Matos, Chemical Engineer

A Paper read before the American Institute of Chemical Engineers, Troy, N. Y., June 17th, 1914)

(Continued from July.)

Afterwards the stock is well washed. The process is less injurious to the wool than the acid process but is much more costly. This process is believed by the writer to be properly credited to Joly, of Elbeuf, France, who referred to its use particularly in carbonizing fabrics. Magnesium chloride while destroying vegetable matter is not as easy to handle as aluminium chloride.

There are other processes for carbonizing rags, which may be briefly enumerated.

Calcium chloride in solution was recommended by Poulin, of Paris, in 1881, who used 4 parts of a solution of calcium chloride at 32° Tw. diluted to 3 parts of water, or a solution of 2 parts sodium chloride and 2 parts of hydrochloric acid to each gallon of water. The reaction of these two processes appeared to be that of hydrochloric acid in solution. During the subsequent baking, the vegetable fiber is disintegrated.

Since the extended use of silk for sewing and for fancy effect stripes, etc., in the manufacture of men's and women's goods, there are immense quantities of shoddy on the market that is otherwise unavailable on account of particles that cannot be successfully removed by any carbonizing process. Silk is dissolved in a solution of ammonium copper-oxide (Schweitzer's reagent) and without action on the wool, but while excellent results are obtained by treating small batches of shoddy in this reagent, difficulties are met preventing its use on a commercial scale.

The handling of rags on a commercial scale has remained a thoroughly organized business, which in the metropolitan centers is more thoroughly specialized than in the smaller places, but the operations generally work out in the following order: 1, the "rag man," or rag gatherer; 2, local rag dealer; 3, central rag dealer; 4, rag sorter or shoddy dealer; 5, shoddy manufacturer; 6, the woolen mill.

A mill for the utilization of shoddy, or its conversion into finished fabrics does not differ materially from an ordinary woolen mill, the sequence of operations being in the following order, and as described, contemplate the establishment commencing its operations with sorted rags as bought from the rag dealer, and are as follows: 1, rag shaking, which has for its object the removal of dust, dirt, etc.; 2, extracting or carbonizing; 3, stripping according to the nature of the rag, and has for its object the removal of the old dye. This operation is sometimes omitted where the original color of the rags will serve as such in the cloth contemplated; 4, dyeing; 5, drying and oiling; 6, garnetting; 7, blending and oiling; 8, teasing; 9, carding; 10, spinning; 11, weaving; 12, scouring, to remove the added oils. For such classes of cloth the fabric is dyed after scouring. When this is contemplated the dyeing operation No. 4 above is omitted; 13, raising and milling; 14, finishing.

The shoddy of commerce is graded as follows: Fine white wool yarn, worsted yarn. Garnetted white shoddy, all wool. Medium white knit shoddy, all wool. New fine black worsted shoddy; medium black worsted shoddy; new blue worsted shoddy, best fine. Dark mixed yarn shoddies, extra fine and free from cotton; light yarn shoddy, extra fine; light yarn worsted; dark mixed; fine thibet, all wool; fine dark merino, No. 1, all wool. Medium dark merino, all wool; coarse dark merino, all wool; fine light merino; coarse light merino. Medium light not all wool. Red knit shoddy, all wool. Dark blue shoddy for hosiery manufacturers, strictly all wool; and the same not all wool.

From the above it is seen that certain gradings depend upon colors and in a large number of instances, the color of the finished shoddy is that of the rags from which it is made. The dyeing of shoddy rags to meet special demands of mills is almost invariably done after stripping and carbonizing, as the small amount of acid remaining in the carbonized rags and not washed out, aids in the dyeing.

Rag dyeing is done in either a very crude or in a most advanced way. It is either done in huge dye-tubs where the rags are poled about by hand, or else in pressure dyeing machines where the rags are packed in fixed dye chambers and the dye liquor made to circulate through the fixed mass.

Certain of these dyeing machines have been constructed of immense size so as to handle a large quantity of rags at one time, which is quite necessary owing to the average low intrinsic value of the material. Such dyeing machines have been built with double cages, one in service with a charge of 1,000 pounds of rags, while the other cage is being emptied and refilled. One such machine being sufficient to keep a fair sized shoddy mill constantly supplied with dyed rags. It is usual, however, to have one or two supplementary machines of smaller size either in reserve, or for taking care of special small dyeings.

Other types of rag dyeing machines are constructed on a horizontal revolving perforated cylinder form, in a fixed volume of dye liquor. In either case the result is practically the same. Woolen or extracted rags that have been stripped must be dyed so as to stand the usual milling treatment that is given to the cloth of which it forms a part. Few cloths are made consisting wholly of shoddy. Varying percentages of new wool must always be used, or else great difficulty will be experienced in spinning the threads.

For the production of colors very fast to milling the anthracene colors are used, also some acid colors which are especially fast to milling, such as milling yellow, milling red, wool red, formyl violet, formyl blue, brilliant milling blue, tetra cyanole A, alphanol blue, brilliant milling green, anthracite black and alphanol black. Numerous diamine colors are also entirely fast to milling next to wool; and some of this group, as for instance diamine fast red F, diamine green G, diamine Brown R, M and B, diamine catechine G and 3 G, diamine fast grey B N, may by an aftertreatment with bichrome or chromium fluoride be fixed so completely as to possess very good fastness to milling even next to cotton. The usefulness of shoddy cannot be doubted; it occupies a most important position in the manufacture of many lines of

woolen textiles sold at prices that could not be otherwise produced for reasons previously indicated.

In view of the fact that no known method exists whereby chemists or microscopists can definitely state whether a given fabric consists wholly or partly of shoddy, it is impossible to ascertain the amount contained in any fabric. Many attempts have been made from time to time to devise a practical method for determining its actual presence in fabrics, but without results. The only way to control accurately the admixture of shoddy or regenerated wool fiber or other textile adulterant so that the ultimate buyer of cloth could be assured as to what he is buying, is to provide for the installation of some federal official in the mill, as is done in matters connected with the manufacture of fabrics for the army, or in the animal products inspection service, with the final branding of the finished article.

While the shoddy industry is small, it is essentially one that the chemical engineer can investigate with profit. It has been struggling along for many years without attracting scientific attention and as a consequence has remained practically stationary except for a few very minor improvements to some of the machines employed. The carbonizing process offers a promising field for investigation, particularly in view of the constantly increasing prevalence of silk particles in rags, the presence of which offers distinct obstacles in cloth manufacturing, as many of the dyes used color the wool satisfactorily, but leave the silk only partially stained.

In conclusion permit me to venture the assertion that shoddy manufacturers are entitled to great respect and encouragement as belonging to the increasing army of conservationists so much needed in a new and fast developing country. The motto of the great Franklin: "A penny saved is a penny earned," might well be their shibboleth as making clear their right to the encouragement and cooperation of all economic factors.

BLACK DYEING

BY CHROMIUM

Logwood is still extensively used for wool in spite of its inferior fastness to acids and light, even for the best classes of goods, and this is due to its rich bloom, easy application, and low cost. Like most other dyes, its fastness is very largely in proportion to its depth of shade, and a logwood black which is only a logwood blue many shades darker, is very much faster than the blue. The old fashioned paste extracts have been nearly superseded by the crystal brand of hematine, as this is now made in the purest form, and is both easier to weigh besides being constant in its composition. Apart from these important features, there are no chips to wash out after dyeing, which was always a drawback to the use of wood. Another good feature of logwood is its standing potting, a test which is very severe, and which many of the tar dyes cannot stand without the color deteriorating. Alizarine black was one of the first to stand this test, followed by the Diamond black class and others of the after chroming method of dyeing. For blacks which were not potted, but which had to satisfy severe demands in respect to light and milling, the after chromed blacks, Diamond black F, Fast Chrome blacks, and Anthracene Chrome blacks have all come into favor, and are in ever increasing use owing to their simple, quick and cheap method of dyeing. Acid blacks have also had a good run owing to the popularity of blacks with white cotton in, which of course must be left unstained.

Single bath methods of dyeing wool and cotton unions by means of suitable mixtures of acid and direct cotton colors are coming to the front more every season, such dyes being used as the direct cotton blacks, direct deep blacks, etc., which dye wool and cotton mixtures a good shade, but one in which the wool is generally a little redder. This, however, can be shaded up by using such acid blacks as Naphthylamine and Naphthalene, which dye wool a full shade in a neutral bath along with Glauber's salt. These blacks can be made more jet in shade by using a little

Indian yellow and Chrysophenine. As most union blacks are mixtures of an acid black with a direct cotton black, the dyer can in many cases mix these for himself, as it requires only a little experimenting to arrive at the correct proportions of both. Shoddy is commonly dyed by filling up the wool portion with logwood or an acid black, and then dyeing the cotton in the washing machine with iron liquor and Myrabolans, although some dyers are coming round to the single bath method that has just been described.

Black upon silk is still more extensively dyed by logwood than by any of the coal-tar dyes, partly on account of the full body and tone that logwood gives, and also by reason of the method of dyeing with tannin matters and iron liquor, which serves the double purpose of a mordant and a weight giver. For wool-silk unions, such as gloria and crepe-de-chine, the Naphthylamine and Naphthalene blacks are principally used, which give full solid blacks in one bath. The bath is made up with Glauber's salt and one of the acids, commonly sulphuric, but more recently with formic acid. Boiling is done very slowly starting from a bath that is quite cold. Very gentle boiling answers the best, a rapid, vigorous one sending the dye onto the wool at the expense of the silk.

Leaving out logwood blacks, the four classes of blacks now dyed on cotton are: Aniline black, sulphide black, developed black, and the direct cotton blacks. The first two are the fastest. Aniline black has the drawback of gradually turning green on exposure to the air, with a tendency to crock, while some of the best jet blacks are liable to tender by laying in stock. Sulphide blacks are quite free from greening, but are fast to bleaching, which the aniline black is when dyed properly. For cotton pieces and yarns the oxidation, aniline blacks are principally used, but for warps it has been replaced by the sulphide dyes. Aniline blacks may be divided into three grades: the single bath, the steam aniline, and the oxidation aniline. The first method is mostly used for yarns, while the second and third processes are mainly used for the piece trade—notably for linings and umbrella cloths. By reason of their fastness to scouring and cross dyeing the developed blacks were extensively used, although they were by no means fast to light, but the sulphur dyes have now replaced them to a large extent as being a quicker and cheaper method of dyeing. For low grade goods where no particular fastness is required the direct cotton blacks are used in large quantities, but these are inferior to the old method of myrabolaus and iron as they do not feed the goods. Under the old style of alternate baths of tannin and iron, the cloth was stiffened out and fed by the tannin to a surprising extent, and this is the chief reason why even today this method is largely used. Both logwood and the tannin bodies give weight and substance, whereas none of the other blacks do, with the exception of some oxidized anilines. This is the reason why the older style is difficult to beat.

THE GERMAN COMMISSION ON THE FASTNESS OF DYES

From the Dyer and Calico Printer

In 1911 the Council of the Verein Deutscher Chemiker invited the section which deals with the chemistry of the textile industries to take steps towards the unification of the very diverse methods now in existence for indicating and estimating the fastness of dyeings. A "fastness committee" was consequently appointed, its members being drawn from all branches of these industries. It consisted of 28 members with Dr. A. Lehne, of Berlin, as chairman, and included Dr. Rassow, the General Secretary of the Verein Deutscher Chemiker. Dr. Krais was appointed secretary of the committee.

To show how fully this committee represented the dye making and dye using industries, and the textile industries generally, so far as the continent of Europe is concerned, we append a list of the institutions and firms which supplied members. It is as follows:—S. H. Sharp & Sons, Ltd., Neue Augsburger Kattunfabrik, Gademann & Co., W. Spindler, Konigliche Materialprufungsamt, Badische Anilin und Soda Fabrik, J. R. Geigy & Co., Barmen Wollechtfarberei, Berlin Hohere

Fachschule fur Textil und Bekleidungs Industrie, Leopold Cassella & Co., Hoechst Farbwerke, The Bayer Company, Zittau Stuckfarberei, Kottgen Seidenfarberei, F. A. Bernhardt, Stuckfarberei, Kammgarnspinnerei, Stohr & Co., Farbwerk Muhlheim, Krefeld Hohere Fachschule fur Textil Industrie, Griesheim Elektron, Elberfeld Baumwollgarnfarberei, and the Basle Gesellschraft.

At a meeting of this committee held at Karlsruhe in September, 1911, it was decided to set up five standards of fastness, No. 5 denoting the maximum fastness, and No. 1 the minimum, and a sub-committee of fourteen members was appointed to test for the determination of these standards. It was resolved later to appoint another sub-committee to consider questions as to which the experts of the first sub-committee were doubtful.

It was a very wise step on the part of the Verein Deutscher Chemiker to restrict the terms of reference to dyeings. The behavior of the dyestuffs themselves to light. and other altering agents is, as everybody knows, and might easily have predicted, no guide to their behavior to the same influences on the fiber.

Subsequently the five types were increased to eight as regards fastness to light, and it will be seen that in many cases only three out of the five have so far been decided on. Special care was taken in fixing the types so that they should not, so to speak, shade off, one into another, but should stand apart as far as possible. Proper attention was of course paid to synonymy, as dyes of identical chemical composition are marketed by different color makers under different fancy names.

The following is the list drawn up by the committee of the kinds of fastness, with the dyestuff types coming under each head. Where the committee thought it necessary particulars of the process whereby the standard dyeing was obtained are given.

Fastness to Light on Cotton

1.	Chicago Blue 6B (one bath) ....%	5.5
2.	Methylene Blue BG	1.0
3.	Indian Blue R	1.0
4.	Kyrogene Violet 3R (one bath) ...	20.0
5.	Benzo Light Red 8BL (one bath) ..	2.5
6.	Hydron Blue G paste (one bath) ...	9.0
7.	Kryogen Black (one bath)	8.0
8.	Indanthrene Blue GC paste (one bath)	25.0

Fastness to Light on Wool

1.	Indigotine I .....%	3.15
2.	Patent Blue A	3.0
3.	Amaranth	3.25
4.	Azo Acid Red B	4.4
5.	Acid Violet 4RN	5.0
6.	Diamine Fast Red F (after-chromed)	2.5
7.	Anthrakinone Green GXN	4.0
8.	Indigo Pure.	

All these determinations were made under glass in the open air. Thus they are free from errors due to the chemical action of atmospheric gases. The light-bleaching unit is the time required to bleach cotton dyed with a 2 per cent. solution of Thiazol Yellow.

Fastness to Washing and Boiling of Colored Cotton Mixed with White

A. The sample plaited with its own weight of white cotton, free from size, is treated in a 50-fold bath containing 2 grammes of Marseilles soap per litre, for half an hour, at 40° C., then squeezed in the fingers ten times, returning it to the bath after each squeeze, and finally rinsed in cold water and dried.

B. The sample is boiled for half an hour in a bath containing 5 grammes of Marseilles soap and 3 of soda ash per liter, allowed to cool in the bath to 40° C. in the course of half an hour, and then wrung, rinsed and dried as A. It will be observed that in this case the length of the bath is not stated. The five types established are as follows:

1. Treated as A. The color bleeds on to the white cotton, but the color of the dyed cotton becomes only slightly paler. The dyeing was done with 3 per cent. Benzopurpurine 4B at the boil for one hour with 20 grammes Glauber's salt per litre, replacing the water as it evaporated. After one hour another 20 grammes of Glauber's salt was

added per litre, and the boiling continued half an hour. Rinsing in cold water.

2. Treated as A. The dyed cotton is unchanged, and there is little or no bleeding. The dyeing was done with 5 per cent. of Primuline, dyed as for 1, then diazotized and developed with beta-naphthol. The dyeing was soaped for five minutes at 35° C., with 2 grammes Marseilles soap per litre.

3. Treated as B. There is little bleeding, but the dyed cotton becomes considerably lighter. The dyeing was done with 2.5 per cent. Indon Blue BB on yarn, first mordanted with 6 per cent. tannin and 3 per cent. antimony salt for half an hour cold, and then boiling up in the course of half an hour, and boiling 15 minutes. Five per cent. acetic acid was used as an assistant.

4. Treated as B. The dyed cotton is unchanged, and there is little bleeding. The dyeing was done with 12 per cent. of Immedial Indone R conc., first one hour at the boil with 150 per cent. of sodium sulphide crystals and 3 grammes soda, and 20 common salt per litre. The evaporated water was replaced. After the first hour 20 grammes more common salt were added per litre, and the boiling was continued 15 minutes longer. Rinsed in warm water. Alternatively the dyeing was done with indigo in the hydrosulphite vat, three ends, with 10 grammes of 20 per cent. indigo paste per litre. After each end the goods were oxidized for ten minutes.

5. Treated as B. The dyed cotton is unaltered, and there is little or no bleeding. The standard dyeing was done with Alizarine Red.

Fastness to Washing of Dyed Wool with Undyed Wool and Cotton

A. The sample is mixed with its own weight of white zephyr and its own weight of white cotton, both free from size and treated in a 50-fold bath containing 10 grammes of neutral Marseilles soap and half a gramme of soda ash per litre for 15 minutes at 40° C., and squeezed in the fingers five times, rinsed and dried.

B. The same mixture is treated in the same way, but at 80° C., and the sample is lifted and allowed to cool for 15 minutes before squeezing. The following are the types:

Fastness Mixed with White Wool

1. Treated as A. Dyed shade much altered and much bleeding. The dyeing was done with 2 per cent. Orange 2, 10 per cent. Glauber's salt crystals, and 10 per cent. tartar preparation, for one hour at the boil.

3. Treated as A. Dyed shade altered slightly or not at all, and no bleeding. The dyeing was done with 2 per cent. of Patent Blue A, 10 per cent. Glauber's salt crystals, and 3 per cent. of acetic acid, beginning at 40° C., boiling up in 20 minutes, and boiling gently one hour. After the first half hour the bath was exhausted with sulphuric acid.

5. Treated as B. Dyed shade unchanged or nearly so. No bleeding. The dyeing was done with 7 per cent. Palatine Chrome Black 6B, 10 per cent. Glauber's salt crystals, and 3 per cent. acetic acid, entering at 60° C., bringing to the boil in 15 minutes, exhausting after half an hour's boiling by the gradual addition of 2 per cent. sulphuric acid, cooling to 70° C., adding 2 1/2 per cent. of bichromate of potash, and boiling gently for 40 minutes.

Fastness Mixed with White Cotton

1. Treated as A. Much bleeding. Dyed with 2 per cent. of Chrysophenine G, with 10 per cent. Glauber's salt crystals, starting at 40° C., bringing to the boil in 20 minutes, and boiling gently for one hour. After 45 minutes' boiling, the bath was exhausted with 2 per cent. of acetic acid.

3. Treated as A. No bleeding. Dyeing done with 2 per cent. of Patent Blue A, as in the last example of the use of that dye.

5. Treated as B. No bleeding. Dyeing with 7 per cent. of Palatine Chrome Black 6B, as in the last example of the use of that dye.

Fastness to Water of Dyed Cotton

The sample is mixed with half its weight each of white cotton, zephyr and silk, all free from size, and soaked one hour at about 20° C., in a 40-fold bath of distilled water, wrung and dried without artificial heat. Thus hot

water was not tried. The results were as follows:

1. One bath. The cotton becomes paler, and there is bleeding. Dyeing with 2 per cent. of Chrysophenine G, as in the last example of the use of that dye.

(To be continued.)

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Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

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Recipe No. 86

GREEN ON WORSTED DRESS GOODS

Green on 100 lbs. worsted dress goods. Prepare the dye bath with

3 ozs. 227 grs. Amazo Fast Blue.
(American Dyewood Co., 80 Maiden Lane, New York, N. Y.)
2 ozs. 104 grs. Amazo Fast Yellow 6 G.
14 grs. Amazo Fast Red 8 B.
15 lbs. Glauber's Salt.
2 lbs. Oil of Vitriol.

Enter at 120° F., bring to boil and boil 3/4 to 1 hour.

The colors used to produce the above shade are recommended for their good level dyeing properties and for the extreme fastness.

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Recipe No. 87

BROWN ON WORSTED DRESS GOODS

Brown on 100 lbs. worsted dress goods. Prepare the dye bath with

2⅖ ozs. Amazo Fast Red 8 B.
(American Dyewood Co., 80 Maiden Lane, New York, N. Y.)
4⅘ ozs. Amazo Fast Yellow 6 G.
210 grs. Amazo Fast Blue.
15 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid.

Enter at 120° F. and bring to boil in 20 minutes. Boil 3/4 to 1 hour. Rinse.

The colors used to produce the above shade are of exceptional fastness and are recommended for all classes of wool dyeing where extreme fastness is necessary.

Recipe No. 88

RED ON WORSTED YARN

Chrome Fast Red B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Chrome Fast Red B.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
5 lbs. Acetic Acid.

Enter at 120° F., bring to a boil and boil 45 minutes, then add

1 lb. Bichromate of Potash,
2 lbs. Tartar,

and boil 15 minutes longer.

Chrome Fast Red B dyes very evenly and feeds on at a boil. It is fast to light and fulling.

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Recipe No. 89

DARK BLUE ON COTTON YARN

Oxamine Dark Blue B R R X on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Oxamine Dark Blue B R R X.
(Badische & Co., 86 Federal St., Boston, Mass.)
30 lbs. Glauber's Salt (Crystal).

Enter at 180° F. and dye at a boil for one hour.

Oxamine Dark Blue B R R X possesses in general the characteristic properties of the direct cotton colors. It gives a deep blue with a comparatively small amount of dyestuff.

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Recipe No. 90

BROWN ON COTTON YARN

Columbia Catechine G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Columbia Catechine G.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Dye for one hour at 200° F. and then rinse.

Columbia Catechine G, especially if aftertreated in a bath containing

1 lb. Potassium Bichromate,
3 lbs. Blue Stone,
3 lbs. Acetic Acid,

will be found to possess very good fastness to washing for a direct cotton color.

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Recipe No. 91

BLACK ON WORSTED YARN

Oxychrome Blue Black B G on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Oxychrome Blue Black B G.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)

5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter at 120° F., bring to a boil and dye at a boil for one hour. If color is not well exhausted add

1½ lbs. Sulphuric Acid,

and continue boiling 15 minutes longer. Then add

2½ lbs. Bichromate of Potash

and boil 1/2 hour longer.

Oxychrome Blue Black B G may also be applied by the two-bath method, or is an oxychromate color. Its fastness to light is excellent, and very good in nearly every other respect.

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Recipe No. 92

BLUE ON COTTON AND WORSTED UNION CLOTH

Union Blue 2322 on 100 lbs. union cloth. Prepare the dye bath with

3 lbs. Union Blue 2322.
(Innis Speiden & Co., 46 Cliff St., New York, N. Y.)
20 lbs. Glauber's Salt.

Enter cloth at 120° F., work at this temperature for 20 minutes. Raise to a boil and boil 20 minutes. Cool for 20 minutes, lift, rinse and finish.

Union Blue 2322 is well suited for the dyeing of astrakhan, and goods consisting of cotton and wool, dyeing the mixed goods a uniform shade which is very fast to light.

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Recipe No. 93

GREEN ON WORSTED YARN

Carbazol Wool Green S on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Carbazol Wool Green S.
(Cassella Color Co., 182 Front St., New York, N. Y.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 140° F. and dye at a boil for one hour.

Carbazol Wool Green S Pat. is a new product. It is a fast, easily leveling, and economical dyestuff for the dyeing of medium and dark shades of green on wool, and is of particular interest to dyers of carpet and rug yarns, or wherever a full, rich, bright green is desired. It is also excellent as a shading product.

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Recipe No. 94

VIOLET ON WORSTED YARN

Alizarine Direct Violet E 2 B on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Alizarine Direct Violet E 2 B.
(Farbwerke Hoechst, 122 Hudson St., New York, N. Y.)
20 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 180° F. and dye at a boil for one hour.

Alizarine Direct Violet E 2 B dyes level, is fast to light and alkali and will not crock.

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Recipe No. 95

ORANGE ON COTTON YARN

Naphtamine Orange H G on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Naphtamine Orange H G.
(Kalle & Co., 530 Canal St., New York, N. Y.)
30 lbs. Glauber's Salt (Crystal).

Enter at 180° F. and dye at a boil for one hour.

Naphtamine Orange H G gives bright, full shades, is level dyeing and is of interest for all cotton goods as well as cotton and silk union hosiery.

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Recipe No. 96

SCARLET ON COTTON YARN

Benzoform Scarlet B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Benzoform Scarlet B.
(The Bayer Co., 117 Hudson St., New York, N. Y.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 180° F. and dye at a boil for one hour, then rinse and aftertreat in a bath made up with

2 lbs. Formaldehyde Tech.

for 20 to 30 minutes at 140° F., or for 1/2 hour cold. Rinse again and dry.

Benzoform Yellow G L Extra like the other Benzoform colors is rendered fast to washing by this treatment with formaldehyde.

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Recipe No. 97

GREEN ON WORSTED YARN

Anthracene Direct Green B on 100 lbs. worsted yarn. Prepare the dye bath with

3½ lbs. Anthracene Direct Green B.
(Cassella Color Co., 182 Front St., New York, N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 100° F., raise to a boil for one hour, adding

3 lbs. Acetic Acid.

After the bath has boiled 3/4 of an hour, cool bath somewhat and add

1¾ lbs. Potassium Bichromate

and aftertreat at a temperature just below the boil for 3/4 of an hour.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Calculator for Weavers' Wages. Louis Hirsch, 173 Lafayette St., New York City, is the American agent for an automatic calculating machine which is attached to the loom and indicates the amount due the weaver at any time.

Printing Machine. The Elsassische Maschinenbau-Geselschaft, Mulhausen, Germany. A cloth printing machine in which an intermediate roll is placed between the lower printing roll and the two upper press rolls. The two press rolls are set at the same level and are mounted in the same casting as the intermediate roll. The object is to keep the intermediate roll in the same position on the printing roll.

Loom Beaming. Oskar Wauer, Zittau, Germany. A loom beam built with a central head by which friction can be obtained in the center as well as at both ends of the beam.

Air Moistening. Danneberg & Quandt, Berlin O. 112, Germany. An improved method of moistening and ventilating work rooms.

Mule Band Device. F. J. Rigby, Bolton, Eng. An improved tension device for the bands of self acting mules.

Warp Friction Device. Derby Weighting Motion Co., Colne, Eng. An improved device for adjusting the tension on warp beams during weaving.

Opener for Cotton. Taylor, Lang & Co., Stalybridge, Eng. An improved opener for Sea Island and Egyptian cotton.

Toweling Folding Machine. The Mellville-Brodie Engineering Co., Kirkcaldy, Eng., have recently brought out an automatic machine for folding towels.

Magnifying Thermometer. T. Sugden, Ltd., London, Eng., have recently placed on the market a magnifying thermometer especially adapted for use in textile mills.

Treating Silk. Dr. Saly Culp, Barmen, Germany. A process of treating natural and artificial silk by which the filament is enlarged, but not made any heavier.

Ring Spinning Frame for Woolen Yarn. The Progress Machine Co., 17 Cannon St., Accrington, England. An improved ring frame for spinning carded woolen yarn.

Tape Sizing Machine. William Heap, Witham St., Ashton-under-Lyne, England. A device for regulating the tension of the warp on tape sizing machines.

Beetling Machine. J. & E. Arnfield, Ltd., New Mills, Eng. An improved beetling machine embodying a number of new features.

Doffing Device. E. Jagger & Co., Oldham, Eng. An improved device for placing bobbins on the spindles of mules.

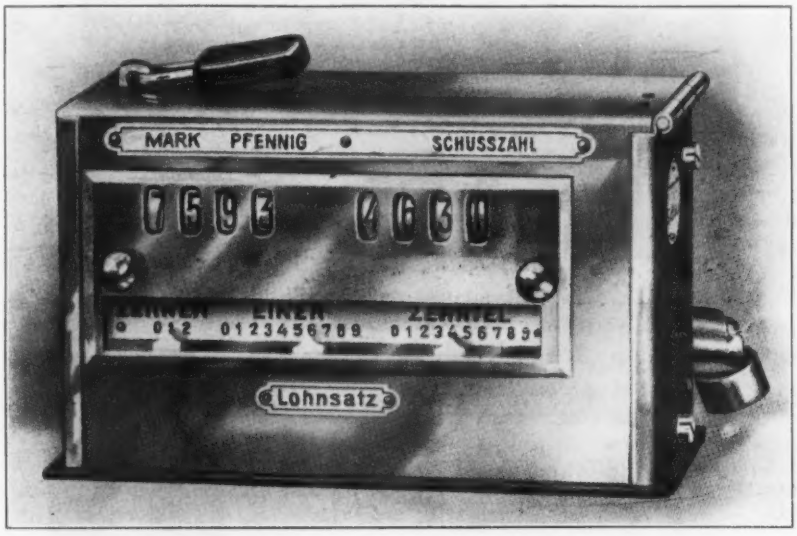
Improvements for Feeler Looms. The Draper Co., Hopedale, Mass., have placed on the market a number of improvements for winding yarn on bobbins for feeler looms and for placing the bobbins in the shuttles to ensure the action of the feeler motion.

Doffing Device. Wilhelm Hampe, Jr., Helmstedt, Germany. A device for doffing flyers, ring spinning frames and twisters.

Warp Stop Motion. The Textilmaschinenfabrik Schwenningen, Schwenningen, Norway. An indicator to show the location of the broken thread when the loom is stopped by a warp stop motion.

A CALCULATING MACHINE FOR WEAVERS' WAGES

The illustration shows a calculating machine which is in wide use in Continental mills for automatically calculating the wages of weavers. It is manufactured by the Arbeits-und Lohnverrechner-Gesellschaft m. b.H., Wien, IX, Kolingasse 3, Vienna, Austria. Louis Hirsch, 173 Lafayette St., New York City, is the sole American agent. The machine is attached to the chain shaft on woolen looms and to the main shaft on cotton looms. It is the custom to pay the weavers in Continental mills a price based on the number of thousand picks actually woven and it is for this system that the calculating machine is specially adapted. The figures in the upper row at the left show the amount due the weaver. The figures at the right in the upper row indicate the number of thousand picks that have been woven. When the machine is attached to a loom the pointers on the lower row of figures are adjusted to the list price per thousand picks. The illustration shows these pointers set for 16.4 heller per thousand picks, but the machine can, of course, be adjusted to American currency. The machine is so constructed that when the pointers are set in this position the figures in the upper left-hand row automatically indicate the amount due the weaver at this rate for any cloth that has been woven. At the end of the week all that is necessary is for the overseer or payroll clerk to make a record of the amount due each weaver as indicated by the machine on each loom. The indicators in the upper row are then set at 0 ready for the next week's work. The indicator is securely locked so as to prevent any interference with it except by authorized persons. When paying weavers by the yard in accordance with the list based on the number of picks per inch, there is a constant temptation for the weaver to put less than the required number of picks in the cloth. This often proves a serious matter, resulting in defective goods. The Continental system of paying by the thousand picks obviates this difficulty as the weaver's wage is not affected by the number of picks per inch, but depends solely on the total number of picks of filling actually woven in the goods. The indicator is also useful in testing the amount of cloth obtained from any given quantity of filling. This enables the mill manager to determine accurately the cost of the material and also detect the making of any excessive amount of waste.

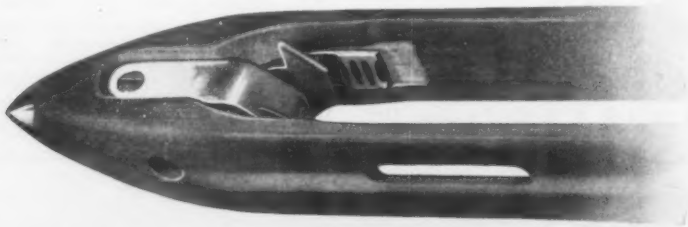


A CALCULATING MACHINE FOR WEAVERS' WAGES

IMPROVEMENTS FOR FEELER LOOMS

The illustrations show a device patented by William P. Straw, of Manchester, N. H., which is recommended by the Draper Co., Hopedale, Mass., who have the exclusive license for its introduction and sale.

Those familiar with the operation of the Northrop loom understand the mechanism

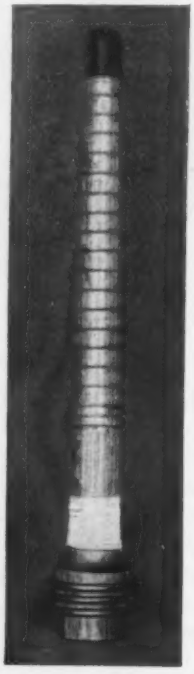


to feel the yarn remaining in the shuttle, which provides for a transfer of bobbins when the yarn reaches the critical point. The feeler mechanism hitherto in use did not measure the exact thickness of the yarn remaining on the bobbin. If the end of the feeler was admitted into the slot in the bobbin the signal was given for a fresh bobbin and the amount of yarn remaining on the old bobbin was only enough to carry the shuttle across to the filling battery, plus enough leeway for varying bobbins, etc. To operate the system successfully the bobbins had to enter the shuttle with their slots opposite the feeler slot in the side of the shuttle. The recesses in the filling battery were given straight sides to cooperate with the flatted sides of the bobbin. In practice it was found that it was difficult to transfer from the battery to the shuttle without the bobbin turning slightly on its axis; also if not firmly held in the shuttle spring there was a possibility of axial rotation.

To obviate this difficulty Mr. Shaw has devised a secondary spring to catch the flat sides of the bobbin as it leaves the filling battery, steer it into the jaws of the shuttle spring and hold it when located in position so that the opening in the bobbin will always register with the opening in the shuttle. To still further reduce the amount of yarn left on the bobbin Mr. Shaw has devised an attachment for spinning frames whereby they are always started at one exact point on the traverse; a course of yarn is laid from this point to the bottom of the traverse and after reaching the bottom the building motion fills the bobbin as usual.

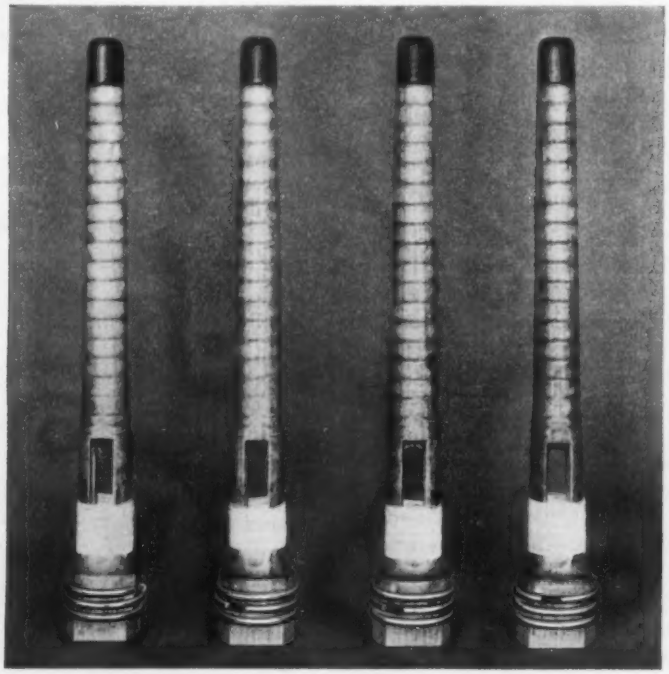
A further necessity is a type of spinning spindle that always carries the bobbins at a uniform level; the Rabbeth patent centrifugal clutch spindles fill these requirements.

With these improvements the amount of waste per bobbin is extremely small, say

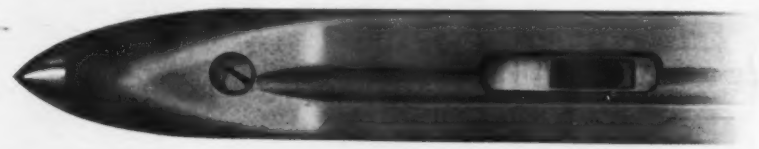


three to six yards per bobbin, depending upon width of goods and other conditions. This waste is in itself so little that it has practically no grip on the bobbin and can

be removed by hand without any mechanical bobbin stripper and as rapidly as the bobbins can be handed. We illustrate bobbins showing the average amount of waste as they leave the looms, one bobbin showing



the flatted sides which cooperate with the openings in battery disc and with the special parts in the shuttle. We also show two views of the spring end of the shuttle.



The Draper Co. is prepared to furnish Northrop looms equipped with this patent, or to apply them to Northrop looms now in use.

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The export trade in lace from Nottingham to the United States in 1913 amounted to $9,868,381, which was an increase of about $1,275,000 over that of 1912, and the largest in the history of the trade.

THICKNESS GAUGES

In 1896, Frank E. Randall, of Waltham, Mass., began the manufacture of the Randall & Stickney dial micrometer gauges, thus introducing to the trade a new type of gauge. The screw micrometer had long been on the market and had become invaluable but Mr. Randall, recognizing that for certain manufactures a gauge into which the personal factor did not enter when gauging and which could be easily read at a glance was needed, devoted his time to manufacturing different styles of dial micrometer gauges and indicators which have become known all over the world. These gauges have found a large and ready sale, especially among the manufacturers of paper, card board, rubber, felt, duck, mica, linoleums and all manufacturers of machinery and small tools where accurate

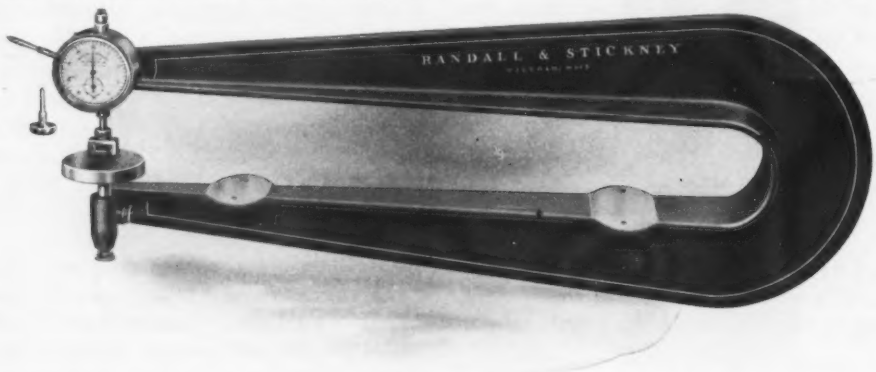
and uniform measurements were required. Recently, several prominent manufacturers of textiles have begun using these gauges, with the result that duplicate orders have followed.

On page 15 of Circular 38 of the Bureau of Standards, very favorable comment is made on the spring or dial micrometer gauge and an illustration of the Randall and Stickney gauge is given.

The gauges best adapted to the textile trade are shown in the accompanying illustrations. The upright, or thickness gauge is 7 1/2 inches high, with a dial two inches in diameter and weighs four pounds. The fundamental principle of this gauge and the only one applicable to the measurement of elastic or yielding material is a standard light pressure on a relatively large area. This light pressure is secured by the use of the spring by which the plunger, or foot, is operated. The strength of the spring and the size of the foot are governed by the kind of material to be gauged. The great feature of this method of measurement is absolute reliability and the elimination of the personal factor which makes other methods of measurements unreliable. The hands are rotated by a rack and pinion. The dial is divided into fifty divisions, each division representing .001 of an inch. The long hand registers the thousandths of an inch and the small hands the tenths, the

In gauging an article, the plunger is raised by pressing down the lever on the left and the article placed on the table under

RANDALL & STICKNEY THICKNESS GAUGE



LONG ARM THICKNESS GAUGE

gauge having a measuring capacity of one-half inch. Gauges in the metric system are furnished if desired.

the plunger. The lever is then gently released and the hands register the thickness.

The "Long Arm Gauge" was first de-

signed at the request of several members of the duck and rubber trade to meet the demand for an accurate gauge of greater capacity than the well known Randall and Stickney Thickness Gauge. This gauge operates in exactly the same manner as the "thickness gauge," the principle difference being the possibility of reaching into the material to a distance of 18 inches. This gauge is regularly fitted with a roller on the plunger, thus enabling the operator to draw through sheets of freshly frictioned or coated goods or any wide material and determine the variations in gauge. A flat foot of any desired diameter can be fitted in place of the roller. The frame is fitted with four machined lugs by means of which the gauge may be attached to any machine; or the lower arm may be screwed to the under side of a table top with a hole in it large enough to allow the gauge table to pass through, thus providing a support for large sheets of pliable material. Legs may also be attached and the gauge allowed to rest on a bench.

Mr. Randall is building a new continuous gauge (patent applied for) which is to be attached to machines and which will measure the thickness and show the variation in thickness of material in a continuous sheet as it moves through the machines. This will be especially useful in connection with cloth inspecting machines and all other machines through which material is moving.

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The aggregate value of silk goods exported from France during 1913 was $72,311,503.

In the last four years the total exports of cotton cloth from Great Britain to all countries was as follows: 1910, 6,018,454,000 yards; 1911, 6,653,613,000 yards; 1912, 6,912,919,700 yards; 1913, 7,075,558,400 yards.

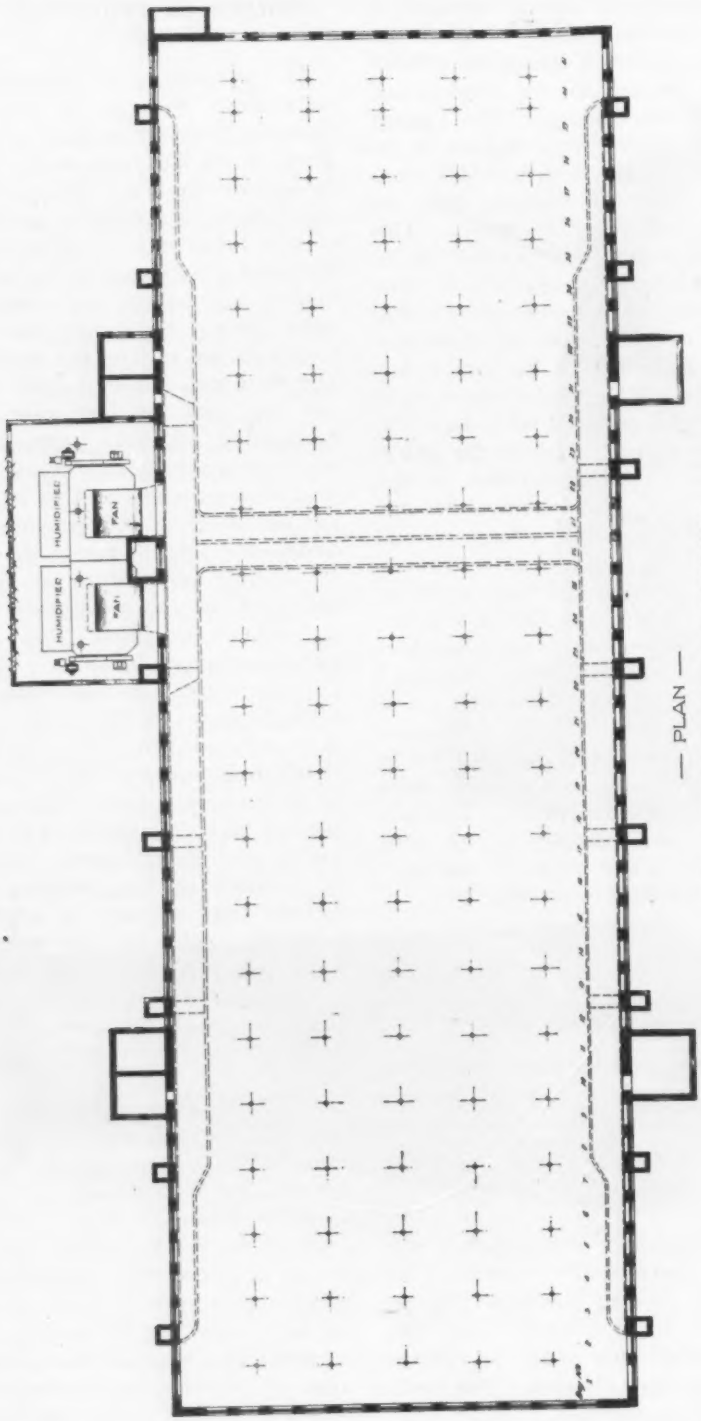
Through the activities of a woman's silk culture society, 5,000,000 silk worms will be raised during the coming season at the society's station in Napa County, Cal. According to the California press the society has 750 mulberry trees growing on its lands and more are being planted.

COOLING AN INDUSTRIAL BUILDING

BY CORTLANDT

The accompanying illustrations show two installations made by the Carrier Air Conditioning Company of 39 Cortlandt St., New York, at the Riverside & Dan River Cotton Mills, Danville, Va. The size of the equipment used for cooling is greatly in excess of that required for heating in winter, and the same apparatus provides for the heating, humidifying, cooling and ventilating of these mills, giving ventilation that is rarely, if ever, equalled in hospitals or school houses. The main mill is four stories in height, 340 feet long and 150 feet wide. When fully equipped it will have 73,000 spindles, with the accompanying machinery. The weave shed is a one-story and basement building, 450 feet long by 315 feet wide. It will accommodate over nineteen hundred looms. All shafting and motors are hung from the ceiling of the basement, with belts extending through the floor. Fig. 1 shows the arrangement of the No. 4 spinning mill. The air conditioning apparatus is placed in a single story building adjoining the mill and consists of two Carrier humidifiers, each of which is approximately thirty feet wide by thirteen feet high. The air is drawn through the humidifiers by two No. 26 double inlet Buffalo fans. The amount of air handled in this building during the summer time amounts to approximately a half million cubic feet per minute. The air is discharged from the fans through underground ducts as shown by drawings, and thence through pilasters alongside the building, and discharged into the various floors.

The heating coils consisting of Vento radiation are placed in each individual air outlet. These outlets are also provided with diffusers for distributing the air over the floors as shown at Fig. 2. This arrangement allows the heating of any floor while cooling any other floor, and enables one set of humidifiers to provide the various humidities best suited for the work in the various departments. One of the greatest advantages of locating the heating coils in the outlets as shown, is that they may be used



— PLAN —

FIG. 1. ARRANGEMENT OF THE SPINNING MILL

for heating at nights to keep the building at a comfortable temperature by the induced current of air up the flues, and without the fans being in operation. It also enables the heating apparatus to take care of any local conditions and to guard against any portion of the building being cooler than any other portion, due to high winds or such.

Excessive temperature of textile mills in summer is due to the friction of the high speed spindles, shafts, etc., all of which produces heat. I have seen a temperature in a cotton mill 111° F., when the outside temperature was 72°, and with no heat supply to the room except the friction of the machinery. In order to absorb this heat, large quantities of air are required. One of the fans and humidifiers is ample for heating and ventilating during the cold winter months, while both fans are used throughout the hot weather of summer, when cooling is required. The Carrier variable water temperature automatic humidity control is used for regulating the amount of moisture carried by the air leaving the humidifiers. In addition to this, the Carrier automatic relative humidity and temperature control is used for regulating the steam supply to the heating coils and dampers in each outlet, which regulates the quantity of air supplied to each room, thus providing for automatic humidity and temperature control throughout all seasons of the year.

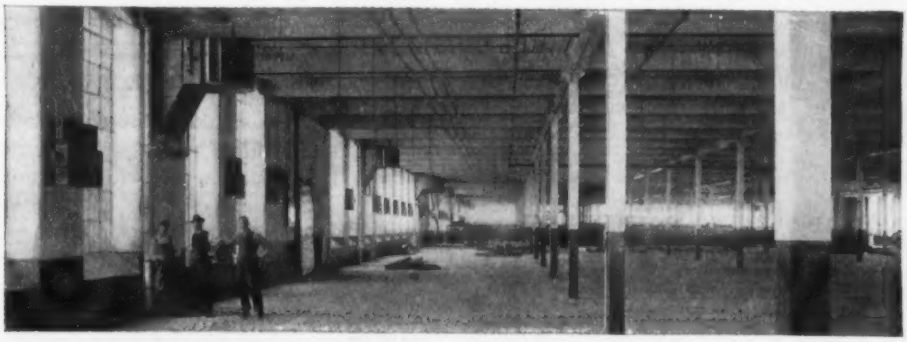


FIG. 2. SHOWING OUTLETS FOR DISTRIBUTING THE AIR

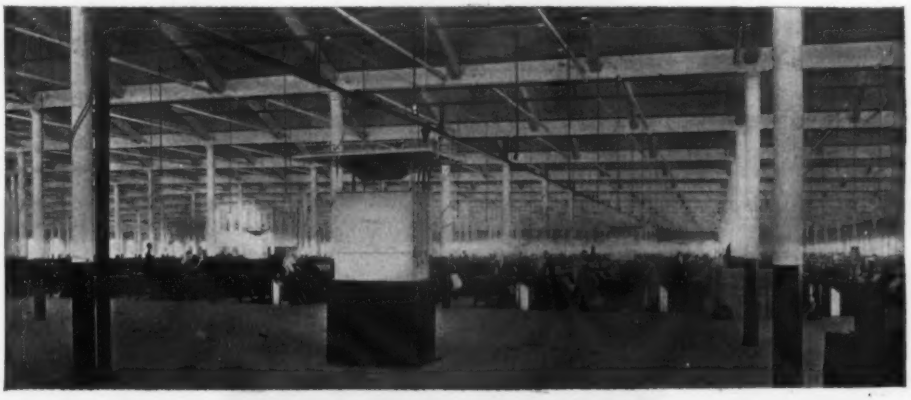


FIG 3. SHOWING DIFFUSERS OF A CONICAL SHAPE FOR DISTRIBUTING THE AIR

The apparatus in the weave shed, while somewhat smaller, consists of the same apparatus, excepting in this case, only one room having to be heated, the heating coils are placed between the humidifiers and the fans. The distributing ducts are made of galvanized iron, carried along the basement

ceiling, with twelve vertical risers extending through the first floor and discharging the air about ten feet above the floor line. Each of these vertical flues takes up the same floor space as one loom so that twelve looms out of nineteen hundred and sixty have been eliminated from the building, in order to provide for these air outlets. The air is distributed by diffusers of a conical shape shown at Fig. 3. Both mills can be kept at a temperature below that outside during the hottest days of the year.

THREAD CUTTING MACHINE FOR HOSIERY

The illustration shows a device for cutting out floating threads on double sole, high spliced heel hosiery. This trimmer has a capacity of 200 to 250 dozen per day. A special tension attachment holds the threads fast while the actual cutting is taking place, making it possible to cut the threads clean and very close. The machine comes in two sizes, 3 1/4 inch size for work made on 3 3/4 inch knitters and 3 inch size for work made on 3 1/2 inch knitter. Other special sizes can be furnished if desired. The machine is manufactured by Henry H. Skevington, 1610 North Phillips St., Philadelphia, Pa.

A THREAD CUTTING MACHINE FOR HOSIERY

A BRUSH FOR PILE FABRICS

The illustrations show the construction of an English machine, recently patented in this country and which is used for brushing pile fabrics. It is described by the inventor as follows: In cross brushing machines as at present constructed it is customary to employ a number of rows of rollers arranged one above the other, the upper row or rows of rollers constituting the brushing rollers and the lower row the tensioning rollers, the fabric to be treated being traversed in a zig-zag fashion over the brushing rollers and under the tensioning rollers, and subjected to

a brushing operation by a reciprocating brush which travels to and fro across the width of the fabric, one brush being employed in conjunction with each brushing roller. This arrangement necessitates a

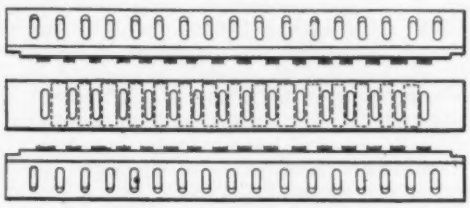


FIG. 1. A DIAGRAM OF THE BRUSH

large number of working parts and a machine which covers a considerable amount of floor space, moreover a large amount of power is required to draw the fabric under and over the various sets of rollers.

Instead of applying a single brush to each brushing roller and employing a number of such rollers to complete the brushing operation, the fabric to be treated is passed around a revolving drum and is subjected to a reciprocating brushing action in a lateral direction by relative movement of the fabric and a series of brushes which surround or partly surround the drum. The latter may be made of such a diameter as to accommodate a sufficient number of brushes to complete the brushing operation on one drum. Two or more drums may be placed one above the other in one machine and two or more pieces of fabric may be treated at the same time. If desired the drums may be made somewhat smaller in diameter and the fabric may be taken from one drum to another to complete the brushing operation. The relative movement of the fabric and brushes is advantageously produced by imparting a reciprocating endwise movement to the drum and holding the brushes which surround the same in a stationary condition, any suitable means being provided for causing the brushes to exert pressure upon the fabric and for taking up for wear in the bristles.

Figs. 1 and 2 are diagrams of the brushes. Fig. 3 is an end view of the drum around which the brushes are arranged. Fig. 4 is a longitudinal section of part of the drum.

Each of the brushes is supported at each end in a frame or holder that is formed with a number of pockets, Fig. 3, to receive the ends of the brush backs and is secured to the adjacent end frame of the machine.

The brushes are detachably mounted in the pockets and the ends of each brush back are rabbeted or recessed, Figs. 1 and 2, to enable the brushes to be adjusted for wear and to prevent the brush back from coming into contact with the fabric, the arrangement being such that before the bristles are worn flush with the surface of the brush the portion of the brush back comes into contact with the pocket flange, and prevents further adjustment of the brush.

Each brush is arranged to exert a yielding pressure upon the fabric by means of springs provided with regulating devices for controlling the pressure exerted by the springs.

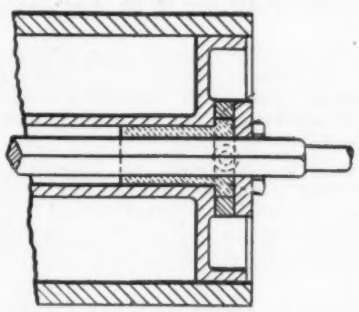


FIG. 2. A DIAGRAM OF THE BRUSH

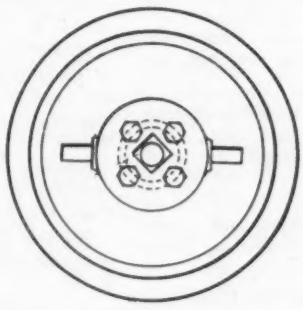


FIG. 3. AN END VIEW OF THE DRUM

FIG. 4. A LONGITUDINAL SECTION OF PART OF THE DRUM

Personals

A. W. Buhlmann, of New York, textile engineer and importer of machinery, sailed on the "Aquitania" on July 21st for his annual business and pleasure trip to Europe. Mr. Buhlmann expects to motor through England, France, Switzerland and Germany, calling upon representative mills and machine builders to keep in touch with what is new and of interest to American manufacturers. Mrs. Buhlmann accompanied him on the trip.

We are informed that Stephen C. Lowe has resigned the agency of John Hetherington & Sons, Ltd., Manchester, England, to take effect on October 1st. Mr. Lowe has been the representative of their cotton machinery account in the United States and Canada for nearly fourteen years. It is understood that he will remain identified with the textile trade, but at the present time he is not in a position to make his plans public.

E. D. Royce, superintendent of the Great Falls Woolen Co., Somersworth, N. H., has resigned his position with that company. It is reported that he has accepted a similar position with the E. E. Hillard Co., Inc., Buckland, Conn.

J. S. Bradbury, manager of the Demopolis Cotton Mills, Demopolis, Ala., has resigned his position with that company.

Benjamin J. Russell has been elected president of the Marble City Mills, Sylacauga, Ala., succeeding J. M. Lewis and S. P. McDonald has been elected secretary and treasurer to succeed M. B. Lewis.

A. Smith has resigned as secretary and treasurer of the Mt. Vernon Woodberry Cotton Duck Co., Baltimore, Md.

Ira F. Phillips, superintendent of the Louisville Cotton Mill, Louisville, Ky., has resigned his position with that company.

Cornelius Hamill, overseer of weaving at the Bellingham Woolen Co., North Bellingham, Mass., has resigned to accept a similar position at Dayville, Conn.

John H. Howarth, for the past six years assistant superintendent for S. Slater & Sons, Inc., Webster, Mass., has resigned his position with that company.

William Atkinson has been appointed overseer of weaving at the Greystone Mill, Joseph Benn & Sons, Inc., Greystone, R. I., to succeed Christopher Bealland. Mr. Atkinson was formerly second hand at this mill and is succeeded in this position by Joseph Garthwaite.

Robert J. Bailey, for a number of years overseer of the cloth department at the Berkeley Co., Berkeley, R. I., has retired from active mill work after spending about fifty years in different cotton mills North and South.

William J. Truesdale, overseer of spinning at the Salmon Falls Manufacturing Co., Salmon Falls, N. H., has resigned his position with that company to accept a similar one at Taunton, Mass.

James Dunn has accepted the position of overseer of spinning at the Bernon Mill, Manville Co., Georgiaville, R. I. He comes from Riverpoint, R. I.

H. C. Pegge, who has been selling the textile trade in and around Philadelphia, Pa., in the interest of C. J. Webb & Co., the well known dealers in cotton yarns in Philadelphia, has been transferred to Boston, Mass., where he will take charge of their office, which they are about to open up at 188 Atlantic Ave., for the purpose of handling the Eastern trade on cotton yarns.

Hugh Watson, president of the Silk City Warping Co., Paterson, N. J., for several years, has resigned and after taking a short vacation will engage in business for himself.

William T. Knight has been appointed manager of the Tilt Silk Mill, Pottsville, Pa., to succeed the late J. M. Harris.

Bert Geary, for the past fourteen years overseer of picking at the Goodall Worsted Co., Sanford, Me., has accepted a position as overseer of steaming, drying and brushing at the Mianus Manufacturing Co., Coscob, Conn.

Edward Adams has accepted the position of overseer of carding at the Glen Woolen Co., Norwich, Conn., to succeed Frank Ward.

William J. Burke has resigned his position as overseer of finishing at the Akela Mill, Pascoag, R. I.

George M. Foley, second hand in the spinning department at the Talbot Mill, North Billerica, Mass., and Miss Florence McNamara, of the office force of the same mill, were united in marriage Wednesday, June 24. After a reception held at the home of the bride's uncle, William Ready, the couple left for a short wedding trip. Mr. Foley will become overseer of spinning at the branch mill of the Mianus Manufacturing Co. at Norwalk, Conn. He is a brother of Thomas E. Foley, who is overseer of spinning at the Mianus Manufacturing Co. at Coscob, Conn.

Bud White has accepted the position of second-hand of spinning at the Chadwick-Hoskins Mill No. 3, Charlotte, N. C. He was formerly employed at the Magnolia Mills, in the same city.

W. W. Meredith has reentered the employ of the Camperdown Mills, Greenville, S. C. as overseer of carding on the night shift.

J. C. Frances has accepted the position of overseer of spinning at the Highland Park No. 1 Mill, Charlotte, N. C.

J. H. Cochran has been promoted from second-hand to overseer of spinning at the Pickett Mills, High Point, N. C.

Arthur Jacobs has accepted the position of overseer of carding at the Greylock Mill C, North Pownal, Vt. He was formerly employed as second hand of carding at the Berkshire Cotton Manufacturing Co., Adams, Mass.

Thomas T. Somerville has accepted the position of overseer of finishing at the Arms Mill, American Woolen Co., Skowhegan, Me. Lees Hall has been appointed overseer of dyeing for this same company.

Harry Gaunt, agent of the Premier Worsted Mill, Pascoag, R. I., has been elected general manager of the Jamestown Worsted Mill, Jamestown, N. Y. Mr. Gaunt continues in the position of agent of the Premier Worsted Mill.

Thomas Perkins, superintendent of the Chicopee Manufacturing Co., Chicopee Falls, Mass., has tendered his resignation with this company, after a number of years of service.

George A. Irons, overseer of weaving at the Somerset Manufacturing Co., Raritan, N. J., has severed his connection with that company.

J. Colby Lewis has accepted the position of overseer of carding at the Lockwood Co., Waterville, Me. He comes from North Pownal, Vt.

Wendell J. Battye, designer at the Stillwater Worsted Co., Harrisville, R. I., has severed his connection with that company.

Albert Rushworth, designer at the Tuxedo Mills, Passaic, N. J., has severed his connection with that company. He is succeeded by Thomas F. Loftus, who will take charge of the weaving and designing for this company.

Murray F. Walck has accepted the position of overseer of weaving at the Oakland Manufacturing Co., Reisterstown, Md.

Matthew Allan has accepted the position of overseer of spinning at the Weybosset Mill, American Woolen Co., Providence, R. I.

George R. Giffin, Jr., assistant superintendent at the Merrimack Woolen Co., Lowell, Mass., has severed his connection with that company.

W. A. Booth, overseer of weaving at the Hawthorn Mill, American Felt Co., Hyde Park, Mass., has resigned to accept a similar position with the Merrimack Woolen Co., Lowell, Mass.

Edward Talbert, overseer of dyeing at the Merrimack Woolen Co., Lowell, Mass., has resigned his position with that company.

William P. Welch of Monson, Mass., has accepted a position as bookkeeper at the Garland Woolen Co., Staffordville, Conn.

Frederick Tillotson, overseer of weaving at the Atlantic Mills, Providence, R. I., has resigned his position with that company after a number of years of service. The help in the weaving department presented him with a diamond ring and a silk umbrella.

Frank Kern has resigned his position as overseer of spooling, warping and slashing at the Fall River Iron Works No. 6 Mill, Fall River, Mass., to accept a similar position at the Stafford Mill, same city. He is succeeded at the Fall River Iron Works No. 6 Mill by Joseph Ratcliffe who comes from the Wampanoag Mill, Fall River.

George R. Giffin, Sr., has resigned his position as overseer of weaving at the Merrimack Woolen Co., Lowell, Mass.

William Marshall, second hand in the weaving department at the Atlantic Mill, Providence, R. I., has resigned his position with that company. The help in this department presented him with a smoking set and a $5 gold piece. Mr. Marshall had been over twenty-six years in the employ of this company.

William Eccote, superintendent of the Tremont & Suffolk Mill, Lowell, Mass., and Miss Carrie B. Palmer were married July 2 by Rev. Benjamin H. Harris at his home on Methuen St., in that city. The couple have left for a short wedding trip.

Obide Viel has accepted the position of overseer of spinning at the Salmon Falls Manufacturing Co., Salmon Falls, N. H., he being promoted from the position of second hand.

James Miller has been appointed superintendent of the Tuckaseege Manufacturing Co., Mt. Holly, N. C.

William D. Anderson has resigned as treasurer of the Lockhart Mill, Lockhart, S. C. He is succeeded by William E. Winchester.

C. D. Weeks has been elected secretary of the Mollohon Mills, Newberry, S. C.

D. E. Rhyne has been appointed agent of the Howell Manufacturing Co., Cherryville, N. C., to succeed C. J. Huss.

F. C. Bertrand has accepted the position of overseer of carding at the Maginnis Cotton Mills, New Orleans, La.

W. W. Morrison has been appointed superintendent of the Equinox Mills, Anderson, S. C. He comes from Fall River, Mass.

L. H. Hurley has accepted the position of overseer of carding at the Louisville Cotton Mills, Louisville, Ky.

George Richards has accepted the position of overseer of spinning at the Maginnis Cotton Mills, New Orleans, La.

Henry Williams has accepted the position of overseer of spinning at the Gainesville Cotton Mills, Gainesville, Ga.

Fletcher Rogers has succeeded I. J. Goings as overseer of spinning at the Arkwright Mill, Spartanburg, S. C.

Clarence Hanson, pay master at the Lewiston Bleachery & Dye Works, Lewiston, Me., for the past twenty-two years, has resigned to accept the treasurership of the East Braintree Bleachery & Dye Works, East Braintree, Mass.

Richard Lees, manager of the Swift River Co., Smith's, Mass., has resigned to accept the position of agent of the Great Falls Woolen Co., Somersworth, N. H.

W. E. Gaffrey, superintendent of the dyeing department at the Nashua Manufacturing Co., Nashua, N. H., has resigned his position with that company to accept a similar position with the Waltham Bleachery & Dye Works, Waltham, Mass.

John T. Killars, Jr., has been appointed assistant superintendent of the American Velvet Co.'s Mill at Stonington, Conn. He comes from North Adams, Mass.

Thomas Ballantyne, Sr., has been appointed superintendent and designer at the Merrimack Woolen Co., Lowell, Mass.

Frederick H. Greenhalgh, employed at the Peace Dale Manufacturing Co., Peace Dale, R. I., for a number of years as second hand in the weaving department, and later as overseer, has resigned his position with that company. He is succeeded by Harold Taulber, who comes from Yorkshire, Eng.

James Airey, overseer of weaving at the Eagle & Phenix Mill, Columbus, Ga., has resigned his position with that company to accept a similar one with the Alta Vista Cotton Mills, Alta Vista, Va.

Charles King, overseer of spinning at the Black River Woolen Co., Ludlow, Vt., for a number of years, has resigned his position with that company.

Paul Hoefer has been appointed designer at the Atlantic Mills, Providence, R. I. Mr. Hoefer is an addition to the present force of designers now employed at this mill.

Thomas Costello has accepted the position of overseer of dyeing at the Ricketts & Shaw Mill, Monson, Mass. He was formerly employed as second hand at the George H. Gilbert Mfg. Co.'s Mill at Ware, Mass.

J. E. Pressley has accepted the position of assistant superintendent of Mill No. 1, of the Athens Manufacturing Co., Athens, Ga. He was formerly employed at the White City Mill in the same city.

J. C. Tiddy succeeds C. B. Crook as overseer of spinning at the Amazon Mill, Thomasville, N. C.

E. S. Trammell, overseer of spinning at the Seneca Cotton Mills, Seneca, S. C., now has charge of the carding also, succeeding A. E. Osborne.

D. R. Warlick, overseer of carding at the Bellwill Mill, Wilmington, N. C., has resigned his position with that company. Before leaving the help in his department presented him with a $33 present.

T. L. Alford has accepted the position of designer at the Hampton Cotton Mills Co., Wylie Mills, Chester, S. C.

C. C. Brown has succeeded W. L. Wicker as overseer of beaming and slashing at the Aurora Mills, Burlington, N. C.

George F. Shipp has been appointed superintendent of the Wilson Cotton Mills, Wilson, N. C.

N. L. Whitten has accepted the position of overseer of weaving at the Harmony Grove Mills, Commerca, Ga. He was formerly employed at the Pelham Manufacturing Co., Pelham, Ga.

A. L. Agner has accepted the position of overseer of weaving, beaming and slashing for the Erwin Mills, West Durham, N. C.

W. F. Campbell has accepted the position of overseer of spinning at the Nokomis Mill, Lexington, N. C. He was formerly employed at the Dixie Mill, Mooresville, N. C.

M. B. Cockman has accepted the position of overseer of dyeing at the Bellwill Mills, Wilmington, N. C. He was formerly employed at the Delgado Mills, in the same city.

C. A. Grainger has accepted the position of designer at the Monaghan Mills, Greenville, S. C. He was formerly employed at the Wylie Mills, Chester, S. C.

R. W. Kerr, Jr., has accepted the position of overseer of carding at the Eureka Mill, Chester, S. C.

P. L. Durham has accepted the position of overseer of the cloth room at the Abbeville Mills, Abbeville, S. C. He was formerly employed at the Norris Mill, Cateechee, S. C.

B. L. Amick has been appointed superintendent of the Franklin Mill, Concord, N. C., to succeed W. E. G. Robinson. He was formerly employed in a similar position at the Barringer Manufacturing Co., Rockwell, N. C.

C. G. Gault has accepted the position of overseer of spinning at the Chadwick-Hoskins Manufacturing Co., Mill No. 3, Charlotte, N. C. He was formerly employed at the Highland Park Mill No. 1, same city.

W. H. Hearn has accepted the position of overseer of spinning at the Thrift Manufacturing Co., Paw Creek, N. C. He was formerly employed at the Pomona Mill, Greensboro, N. C.

J. L. Gribble has been appointed assistant superintendent at the Monarch Mills, Dallas, N. C. He was formerly employed at the Rodman Heath Mill, Waxhaw, N. C.

H. H. Hubbert, the cotton yarn commission merchant of Philadelphia, Pa., has resigned the selling agency for Pennsylvania for the City Manufacturing Co., New Bedford, Mass., after serving in that capacity for over twenty-one years. Mr. Hubbert will continue to handle fine high grade yarns from Southern and Eastern mills.

Moses E. H. Ashley, for many years connected with the N. E. Cotton Yarn Co. at the Globe Mill, Fall River, Mass., has resigned his position with that company.

Thomas Asquith has resigned as overseer of spooling, slashing and drawing-in at the Weetamoe Mill, Fall River, Mass., to accept a similar position with the Durfee Mill. He has been succeeded at the Weetamoe Mill by William Gordon.

Patrick Sullivan has been appointed overseer of carding at the Laurel Lake Mills, Fall River, Mass. He was formerly second hand of carding at the Iron Works No. 6 Mill, same city.

Joseph King, second hand in the spinning department at the Fisher Manufacturing Co., Fisherville, Mass., has resigned to accept a similar position with the Bates Manufacturing Co., Lewiston, Me.

Syrus Smith, overseer of carding at the Laurel Lake Mills, Fall River, Mass., has severed his connection with that company.

William Atkinson has accepted the position of overseer of weaving at Jos. Benn & Sons, Inc., Greystone, R. I.

Thomas Garthwaite has been appointed second hand in the weaving department for Jos. Benn & Sons, Inc., Greystone, R. I.

Joseph Cayer has accepted the position of second hand in the ring spinning department at the Fisher Manufacturing Co., Fisherville, Mass.

Charles B. Poore has been appointed superintendent of the Louisville Cotton Mills, Louisville, Ky., succeeding I. F. Phillips.

R. H. Layton has been appointed superintendent at the Barringer Manufacturing Co., Rockwell, N. C. He was formerly employed at the Chadwick Mill No. 3, Charlotte, N. C.

W. L. Pickleseimer has accepted the position of overseer of weaving at the Fairfield Mills, Winnsboro, S. C.

Leo Shindler, overseer of weaving at the Garland Woolen Co., Staffordville, Conn., has resigned his position with that company. He is succeeded by John Millett, formerly employed at the Somerset Woolen Co., Monson, Mass.

Albert A. Booyn has accepted the position of overseer of weaving and designing at the Corr Manufacturing Co., East Taunton, Mass. He was formerly employed at the Nashawena Mills, New Bedford, Mass., as second hand.

Fred Harrow has accepted a position with D. G. Dery as traveling overseer and repairman of quilling and winding frames, taking charge of these machines in the fourteen mills owned by Mr. Dery.

C. J. Apgar has taken charge of the preparatory machinery at D. G. Dery's Mill, Allentown, Pa. Mr. Apgar has been located at the East Mauch Chunk, Pa., Mill of D. G. Dery.

W. R. Warner, known among the Grand Army of the Republic throughout the State, died at his home in Fall River, Mass., recently. He was a local mill and bank director.

Noyes D. Farmer, who has been connected with the U. S. Bobbin & Shuttle Co. of Manchester, N. H., for the past twelve years, two years of this time as superintendent, has resigned his position with that company.

Thomas H. Morrow, late superintendent of the Franklin Mills Corporation, Unionville, Mass., has accepted a similar position with the Oxford Linen Mills, North Brookfield, Mass.

John Hall, superintendent of the Cobourg Dyeing Co., Cobourg, Ont., Canada, has severed his connection with that company.

DEATHS.

Walter Morgan Sharples, senior member of the firm of W. M. & F. M. Sharples, commission yarn dealers of Philadelphia, Pa., died at Media, Pa., after a sudden attack of heart failure on July 5 at the age of 58 years. His wife, two daughters and two sons survive him.

Sidney Ward, a member of the firm of French & Ward, West Stoughton, Mass., died of heart trouble after a short illness at Bronxville, N. Y., in his forty-fourth year. He graduated from Harvard University in 1892. His wife and two children survive him.

Charles Whitney Gleason died at his home in Gleasondale, Mass., July 5. He was born in North Andover, Mass., April 9, 1841, remaining there until 1849 when his parents moved to Gleasondale where he attended the public schools. At the age of 15 he attended a commercial college at Worcester, Mass., and the Lancaster Institute of Lancaster, Mass. During his vacation he worked in the finishing department of his father's mill. At the age of 19 he became bookkeeper and shipping clerk for the company and at the age of 21 he spent some time in traveling through Europe. On his return he took up the position of foreman in one of the departments of the mill. In April, 1863, at the age of 22, he was given a position as superintendent. He did much to promote the prosperity of the mill and to increase the production. Gleason flannels, which had a high standard in the market, were widely known. For a number of years he bought the wool used at this mill, going West each year and buying direct from the farmers. In 1872 Mr. Gleason was admitted to partnership in the mill under the firm name of B. W. Gleason & Sons, the members being Benjamin W. Gleason, Charles Whitney Gleason, Stillman Augustus Gleason and Alfred Dwight Gleason. After his father's death on Jan. 19, 1884, Charles Whitney Gleason became the head of the firm which continued under the old name until the retirement of Stillman A. Gleason when the firm name was changed to C. W. & A. D. Gleason. He was a Republican in politics and the first citizen of the town to cast the Australian ballot. Mr. Gleason was a generous contributor to church work, and had been treasurer of the Gleasondale Methodist Church for the past twenty-four years.

John G. Dolbel, one of the best known woolen mill men in the state of Rhode Island, died at his home in Providence, R. I., after a short illness of pneumonia. He had been superintendent in a number of the best mills in that state and was a very active church member. Up to the first of the year he had been general manager of the R. I. Construction & Supply Co., but disposed of his

interest at the time of his retirement. His widow and two sons survive him.

Charles F. Whitehead, for a number of years an overseer at the Cranska Thread Co., Worcester, Mass., died at his home in Westboro, Mass., at the age of 53 years. One son and two daughters survive him.

George A. Moody, for a number of years superintendent of the Stafford Manufacturing Co., Central Falls, R. I., superintendent of the Newberry Cotton Mills, Newberry, S. C., and the Warren Cotton Mills of West Warren, Mass., died at his home in Pawtucket, R. I., at the age of 61 years, after a lingering illness. He was forced to retire from active work some time ago on account of his health. Mr. Moody was born in Ipswich, Mass., and graduated from public schools in that town. He was highly respected by those who had been directly in his employ and also by people with whom he had been associated.

William S. Blakeley, president of the Arasapha Manufacturing Co., Chester, Pa., died at Ventor, N. J., at the age of 61 years. He was well known in textile circles through his connection as director of the Aberfoyle Manufacturing Co. The cause of his death was heart failure. Two sons and two daughters survive him.

James McCutcheon, well known in the linen business, being a merchant of New York City, died at the Stamford, Conn., Hospital, after an operation for appendicitis, at the age of 72 years. He was a member of the Greenwich, Conn., County Club, and the Indian Harbor Yacht Club. Mr. McCutcheon made his home at Greenwich, Conn., and is survived by two daughters, his wife having died several years ago.

Charles Warner Shepard, known as the father of the lace industry in this country, died of apoplexy, July 17, while on his way home to Shannock from Kenyon, R. I., where he had been on a fishing trip. He was born at Northampton, Mass., Dec. 3, 1846, and is survived by a widow and two sons.

Edwin L. Burnham died at his home in Pittsfield, Mass., at the age of 79 years. Mr. Burnham was a native of Connecticut and for a number of years had charge of the finishing department at the Pontoosuc Woolen Manufacturing Co. at Pittsfield.

Walter Earnshaw, overseer of carding at the Manhasset Manufacturing Co., Putnam, Conn., met with a serious accident and was almost instantly killed when the motor cycle, which he was operating, with a side car attached in which was Miss Louise Murphy of Putnam, collided with an automobile while making a sharp turn in the road. Mr. Earnshaw and Miss Murphy were engaged to be married soon. He was 36 years of age and son of Ellis Earnshaw, who was for a number of years superintendent of the Fisher Manufacturing Co., Fisherville, Mass., He died a few minutes after the accident

William Stafford, of the firm of Stafford & Co., carpet yarn manufacturers, Philadelphia, Pa., died at his home in that city at the age of 62 years. He is survived by a wife, two sons and a daughter.

James McDonald, one of the oldest cotton manufacturers in the South, died at his home in Charlotte, N. C., at the age of 77 years. He had been in the cotton manufacturing business since a young man and was widely known. W. J. McDonald, superintendent of the Walton Mill, Monroe, Ga.; C. B. McDonald, overseer of spinning at the Durham Hosiery Mill, Durham, N. C., and J. R. McDonald, superintendent of the Charlotte Fibre Co. of Charlotte, are his sons, who were trained under him.

Seth C. Foster, president of the Stearns & Foster Co., manufacturers of cotton wadding, mattresses and bedding at Cincinnati, O., died at his home in that city at the age of 91 years. Mr. Foster was a pioneer in the business development of the city. Two sons and three daughters survive him.

Benjamin J. Lloyd, a member of the firm of Folwell Bros. & Co., manufacturers of woolens and worsteds at Philadelphia, Pa., died at the Hahnemann Hospital in that city. Mr. Lloyd had been a sufferer of kidney complaint for a number of years. He was 73 years of age and was born at Nullica Hill, N. J. He organized the firm which owns the large Collingwood Mill at Third and Cambria Sts., Philadelphia.

E. R. Hardt Reithel, superintendent of the Pondville Woolen Mill, Auburn, Mass., died at the City Hospital, Worcester, Mass., from the effect of a shooting affair at the mill in which he acted as peacemaker. He had been in the employ of the company for a number of years and was highly respected.

John F. Healy, for a number of years overseer of weaving at the Wanskuck Co., Providence, R. I., and also a number of other large mills in that city, died at his home in Pawtucket, R. I., following a paralytic shock. He was 65 years of age and is survived by a wife, one son and three daughters.

Joseph C. Walker, superintendent of the New England Cotton Yarn Co., Department 14, East Taunton, Mass., died at the Morton Hospital, Taunton, of appendicitis. He was 33 years of age, married and leaves a wife and three children.

Walter L. Wellington died at Hotel Seymour, New York City, at the age of 65 years. He was born in East Boston, Mass., and at the time of his death represented in the city of New York the Amoskeag Manufacturing Co. of Manchester, N. H., as their selling representative. His wife and one daughter survive him.

Joseph Harley, an old knitting manufacturer, died recently, at the advanced age of 81 years. He was for a long time head of the Penn Knitting Mills and prior to that for many years he conducted a wholesale grocery business. He was one of the pioneers among the Philadelphia knit goods manufacturers.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

Southern Cotton and Knitting Mill Directory; The Textile Manufacturer, Charlotte, N. C. Price, $1.00.

The 1914 edition of this directory of the cotton and knitting mills in the Southern States has been published. The reports are arranged so as to be self indexing, the cotton mills being distinguished from the knitting mills by the use of bold face letters. It is a handy and useful volume, well prepared and arranged.

Davison's Textile Blue Book; The Davison Publishing Co., New York. Price, $4.00.

The 27th annual edition of this well known publication has been issued in its usual comprehensive form and with the usual attractive features It gives under various classifications reports of the textile mills of the United States and Canada, also dealers in textile raw materials, yarn dealers, dry goods commission merchants, etc. The book is well printed and bound and shows careful preparation.

Clark's Directory of Southern Cotton Mills; The Clark Publishing Co., Charlotte, N. C. Price, $1.00.

The 6th edition of this useful textile publication has been received. It is devoted to giving brief reports and data relative to the cotton mills of the South and does not include knitting or woolen mills except those that spin cotton. It gives evidence of the usual careful editing.

Chemical Technology of Textile Fibers; by Dr. Otto N. Witt and Dr. Ludwig Lehman; 384 pages, 5 1/2 by 8 1/2; Friedrich Vieweg & Son, Braunschweig, Germany. Price, $15.00.

We have received the first two parts of the second volume of this elaborate treatise on textile fibers, which is being published in serial form. The two parts which have just appeared deal with the following subjects: The structure of textile fibers; Preparing and bleaching textiles that are to be dyed and printed; Detailed description of cotton bleaching; Bleaching linen and wool; Carbonizing; Boiling-off of silk; Mercerization; Artificial silk; Dyeing cotton. The work deals with both the mechanical and the chemical technology of textiles and is freely illustrated. If the parts still to be published deal with the remainder of the subject as thoroughly as do the two parts that have just come from the press, the complete work will be a valuable aid to textile manufacturers, mill managers and others engaged in the industry.

Yarn Calculation (Garnberechnung); by Robert Wenzel; 142 pages, 4 1/2 by 7; Housdorff & Co., Leipzig, Germany.

This book deals with yarn calculations and is designed for the use of both merchants and manufactures of textiles on the Continent. The contents are arranged under the following heads: Structure of Textile Fibers; Weights and Measures for Yarn; Yarn Numbering; Reed Gauges; Calculating Yarn for Fabrics; Warping; Yarn Tables. While the contents are well arranged and the explanations clearly stated, the book is involved in the well known confusion of textile weights and measures prevailing on the Continent. The text is in German.

The Dyeing of Silk (Farben der Seide); by Dr. A. Ganswindt; 240 pages, 5 by 7; A. Hartleben, Vienna and Leipzig. Price, $2.00.

Books dealing exclusively with special branches of textile manufacturing are growing in favor, because of the high cost and large size of comprehensive works giving a thorough treatment of all branches. This volume by Ganswindt is confined to the dyeing of silk, and as a result the publishers are able to supply a very complete handbook of silk dyeing at a moderate price. The following abstract of the table of contents shows the scope of the volume: Natural Silk; Tussah; Wool and Silk Mixtures; Half Silk; Artificial Silk. The text is in German.

BUSINESS LITERATURE

Anthracene Chrome Red B; Cassella Color Co., 182 Front St., New York City.

This is Supplement No. 56 describing Anthracene Chrome Red B, which is very fast to light, milling, sulphur, alkalies and carbonizers. The shade is bluer and brighter than the "A" brand, dyes level and does not stain cotton or silk.

The Smith & Furbush Machine Co., Hancock and Somerset Sts., Philadelphia, Pa.

This company has issued a list of parts of their improved automatic self feeder, 2-cylinder 20-inch garnet machine and blamire lapper. These machines constitute what they call "Outfit A" for making batts or soft felts. Any user of their felting machinery who has not received them can obtain a copy of this list on application and will find it a useful and time-saving reference guide in ordering parts.

Entwistle Warpers; T. C. Entwistle Co., Lowell, Mass.

This catalog contains an illustrated description of the various warping appliances built by the T. C. Entwistle Co., whose products enjoy an enviable reputation throughout the textile trade. The list of products includes Entwistle slasher warper, warper clock, expansion combs, ball warper, combination beam, leese clock, creel, balling, beaming and doubling machines and grinders. There are also annexed useful tables for change gears, weight of chain warps and weight of yarn on spools and balls.

S.K.F. Ball Bearings for Electric Motors; The S.K.F. Ball Bearing Co., 50 Church St., New York City.

This, it is believed, is the first publication to be issued dealing exclusively with the application of ball bearings to motors. The prejudice against ball bearings, which existed on their general introduction some years ago, has disappeared, and today they are a prominent and valuable feature of machine construction for practically all industries. They have proved especially serviceable for motors of all kinds and their application to this use is described and illustrated in this catalogue, which shows the methods of mounting, gives rules for lubrication and care and calls attention to their many advantages.

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A Manual of Dyeing; 259 pages, 4 by 6 1/2; Cassella Color Co., 182 Front St., New York City.

This is a new edition of the Manual of Dyeing, brought out by the Cassella Color Co. a few years ago. It has been carefully revised to include the latest developments in the art of dyeing and will be found of great value to dyers, not only of textiles of all kinds, but all celluloid goods and materials for buttons. Part 2 deals with dyeing of feathers. Part 3 treats of color lakes, spirit varnishes, dyestuffs for ink, typewriter ribbons, soap, wax, candles, and fats, also leather finishes. The appendix contains much valuable material for reference, including thermometer and hydrometer tables, weights and measures tables and a descriptive list of water and other chemicals.

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The Harris Valveless Engine, Diesel Principle; Harris Patents Co., Philadelphia, Pa.

A 13-page catalogue describing and illustrating the Harris Valveless engine. Conservation of natural resources in receiving more and more attention and in consequence the Diesel engine, one of the most efficient prime movers known, is rapidly forging to the front as a means of power generation, economy of which in both marine and stationary service is eagerly sought after by all, especially when that can be obtained by using an engine which overcomes in a simple and novel manner the difficulties existing in similar engines.

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MOTOR TRUCK ENDURANCE

"I have driven my three-ton KisselKar truck more than 15,000 miles and never yet had a breakdown," says L. G. Goodrich of Fresno, Cal. To which George H. Lawrence of the KisselKar adds:

"That is good news, but Mr. Goodrich's recital of some of the things his truck has done is the astonishing part of it. He admits that the truck has carried seven tons at one time, and several other times he has hauled four or five tons over eight miles of dirt roads. A truck that will stand up continuously for 15,000 miles under such service, ought to be good for mill work."

Industrial Notes

WILLIAM FIRTH

It has been rumored that William Firth, importer of textile machinery, was contemplating giving up the importing business. Mr. Firth authorizes us to deny this rumor, which perhaps arose from the fact that one department of his business has been pushing the sale of several patented specialties which he controls. Mr. Firth continues the Sole Importer of Asa Lees & Co.'s textile machinery, and Sole Agent for United States and Canada for a number of other foreign textile machinery specialties.

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EQUIPPED WITH BALL BEARINGS

The Smith & Furbush Machine Co., Hancock and Somerset Sts., Philadelphia, Pa., are now furnishing ball bearings for the many machines of their manufacture, particularly garnets and pickers. They are now prepared to equip all their new machinery with ball bearings.

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ARLINGTON MILLS

On August 1 the office of the Treasurer of the Arlington Mills was transferred from Boston to the mills at Lawrence, Mass., where all the financial and accounting business of the corporation will be transacted from that date. All purchases of dyestuffs and general supplies which have hertofore been made at the Boston office will be made at the mills at Lawrence. The president's office remains at 78 Chauncy St., Boston, from which office all orders for wool, cotton, etc., will be placed under the direction of President Hobbs as heretofore.

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THE AIR LINE

The Textile World Record received a postal card last month from L. H. A. Schwartz, the well known importer of cotton and textile machinery, written on the Zeppelin airship, Victoria Louise, on the way from Frankfort to Weisbach. He writes, "This is the way to travel."

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Fred A. Glidden, newly elected president of The Glidden Varnish Company, sailed on Thursday, July 23rd, with his family, for a combined business and pleasure trip through Great Britain, Norway, Sweden, Germany and France. Some three years ago The Glidden Company established a complete Foreign Department in their business and have been shipping their products throughout the entire civilized world. Their success during the past ten years has been phenomenal, due largely to their splendid organization, consisting of various departments of Research and Sales. Its new plant in Cleveland comprises seventeen acres, ten of which are covered with modern, concrete, fireproof buildings, enabling them to produce the highest quality of goods at a minimum cost.

NEW FIRM IN THE STARCH BUSINESS

The new firm of Cronkhite, Pope & Co. has been formed to act as sole New England agents for the Douglas Company, Cedar Rapids, Ia., largest independent producer of starch and gluten feed, with a two million dollar plant recently enlarged and equipped with modern machinery. The new firm is composed of Leonard W. Cronkhite of Cambridge and J. William Pope, recently of Chicago. J. William Pope, formerly vice-president of the Charles Pope Glucose Company, and manager of their St. Louis plant, bears a name known to most mill men of twelve years ago. Mr. Pope, with many years of experience as a starch manufacturer, now enters the distributing end of the business with the strongest independent organization in the industry. Mr. Cronkhite will retain the business of The Leonard W. Cronkhite Co., industrial chemicals,—successor to the old Boston importing house, remembered by many mill men of Balch Bailey & Company,—and textile agent for the Proctor & Gamble Distributing Company. Mr. Cronkhite also will remain treasurer of The Industrial Starch Company of Boston. Mr. Cronkhite has made a special study of the physiology of starches and their applications to the textile and paper industries. He received his training at the Massachusetts Institute of Technology, Brown University and the University of Oxford, entering the textile supply business in 1908. The firm has offices at 53 State St., Boston.

KNITTING MACHINES IN CHINA

Consul Myrl S. Myers, Swatow

Considerable expansion occurred during the past 12 months in the knitting industry at Swatow, not only in increased numbers of home workers, but also in the establishment of a steam driven factory, which will commence operations in July, 1914. Heretofore, except for a small factory at Chaoyang, in which 20 hand machines were operated, this industry has been confined to the homes of the operators. It is, therefore, apparent that this factory marks an entirely new development in this industry locally, and should the venture prove profitable, it is reported that further expansion will follow.

The factory is 128 by 53 feet and 32 feet high, built of a kind of concrete, which is used extensively in all native construction work. The machinery will include 40 American automatic machines, 200 and 220 needles each, for knitting socks, 4 American winding machines, and about 20 machines for making towels, nets, and grass matting. A small steam laundry will also be run in connection with the knitting plant. The motive power will be furnished by a 40 h. p. steam engine and ordinary tube boiler. The building cost $9,000 gold, power plant $3,500, machines and accessories $22,500. The factory will have a maximum daily output of 300 dozen pairs of socks, 50 dozen towels, and, in addition, nets and grass matting. About 200 hands will be employed, mostly girls and women, whose wages will average $2.50 monthly with free board.

As has been noted, the home knitting industry expanded during the past year. Thirty-six hand machines for knitting socks and 10 semiautomatic ones were put into operation—increases of over 15 to 28 per cent., respectively. The new hand machines are largely English, while the semiautomatic ones are American. By the addition of these new machines the maximum output may be said to have increased by about 100 dozen pairs of socks per day. Five new machines for knitting coarse cotton sweaters were also started during this period. Information as to the name of the factory and the merchant who has sold most of the machinery is forwarded (and may be had from the Bureau of Foreign and Domestic Commerce and its branches).

MASON MACHINE WORKS

The executive department of the Mason Machine Works of Taunton, Mass., as well as the treasurer's office is now located in the new offices of the company at 77 Franklin St., Boston, Mass.

SALEM CONFLAGRATION GIVES LESSON IN FIRE PREVENTION

The terrible conflagration at Salem, Mass., on June 25, in which $15,000,000 worth of property was destroyed and a quarter of the population rendered homeless, is another striking example of the destruction which so often follows the breaking out of a fire among buildings constructed and roofed with inflammable materials.

The fire started in the midst of a factory district where the buildings were of wood. These almost instantly burst into flame. The blaze ate its way within a few hours to the center of the business district. At the same time another section of the city a mile away was set in flames by embers carried by the wind and falling upon wooden shingled roofs.

Paterson, N. J. in 1902 had a similar disastrous fire experience. Here again it was the readily ignited materials used in the construction of the buildings and especially roofs which aided the rapid spread of the flames.

After this experience the city of Paterson passed an ordinance prohibiting the use of wooden shingles or inflammable roof coverings within the city limits. Since that time in Paterson and suburbs more than 2,000 roofs have been covered with asbestos shingles and asbestos ready roofing.

The efficiency of asbestos roofing as a fire stop is illustrated by the fact that, in the Salem fire, sparks and burning embers were literally showered upon the roof of the Naumkeag Steam Cotton Company's storehouse which was roofed with J-M Asbestos Roofing. This building was absolutely unharmed, while other buildings all around it were burned to the ground.

It is surprising how few cities realize the ever present danger from fire so long as wood shingles and other inflammable roofings are permitted in thickly settled districts. Fireproof construction, especially fireproof roofing is a precaution which no city, that has due regard for the value of life and property, should neglect.

WOVEN LABELS

The Buffalo Woven Label Works, 565-577 Washington St., Buffalo, N. Y., has established a very enviable reputation in the knit goods trade for the high quality of their labels. Quality and prompt delivery are two of their special claims. They manufacture a line of silk and cotton woven labels for shirts, waists, underwear, knit goods, etc., and make a specialty of individual names. Woven labels are absolutely fast, very durable and add much to the appearance of the garment. The business of this company has grown to large proportions and they are known widely throughout the trade, having many representative mills on their line of customers.

FOREIGN TRADE BRANCHES

Secretary of Commerce Redfield has authorized the establishment of branch offices of the Bureau of Foreign and Domestic Commerce at Boston, Mass., and Seattle, Wash., under commercial agents with long training in the work of the Bureau. F. L. Roberts will direct the work at Boston and William B. Henderson will supervise the office at Seattle. These are additions to the number of branch offices established to promote commerce, those already established being located in New York, Chicago, New Orleans and San Francisco. Probably other offices in important commercial centers will also be established at a later date.

The Secretary has also authorized the appointment of a commercial agent with headquarters at Atlanta, Ga., whose duty it will be to make investigations for the promotion of commerce in all the Southern territory from Richmond to New Orleans. W. A. Graham Clark, who has had long experience in the Bureau and with the former Tariff Board and who is an expert on foreign markets, especially for cotton textiles, will take up these duties at an early date.

"BUSINESS GETTING BETTER"

"A good indication that general business conditions are getting steadily better, is the increasing demand for motor trucks," says George H. Lawrence of the KisselKar. "People are not investing in delivery facilities without something to move and it is certainly a significant fact that present indications point to the best summer in the history of the truck trade. Our factory is shipping KisselKar trucks to all sections of the country, and many of them are of the larger models, the 3 1/2 and 6 tonners."

Arthur A. Armington, patent counsellor and solicitor, has removed to offices in the Industrial Trust Co. Bldg., Rooms 530-531, Providence, R. I., where with increased facilities he will be better prepared to serve his clients. He makes a specialty of United States and foreign patents, designs, trademarks and copyrights, particularly in textile machinery cases.

FAR EAST MARKETS FOR COTTON TEXTILES

The Bureau of Foreign and Domestic Commerce of the Department of Commerce has sent one of its commercial agents, Ralph M. Odell, an expert on cotton textiles, to the Orient, India, Straits Settlements, Java, Sumatra, French Indo-China, Australia and New Zealand, to study markets for cotton textiles with a view to promoting the interests of that important industry.

The American Finishing Machinery Company, manufacturers of the bristle cloth stretchers and winders, has moved its shop to 164 A St., South Boston, where with larger quarters and increased facilities the company is equipped to do a general machine business, as well as manufacture the above named specialties. The office will remain as heretofore, at 141 Milk St., Boston, Mass.

TREASURY DECISIONS

T. D. 34587. June 24, 1914. Drawback on ladies' coats and suits. Drawback on ladies' coats and suits manufactured by A. Beller & Co., of New York, with the use of imported woolen, silk and cotton piece goods.

T. D. 34593. June 26, 1914. Drawback on aprons. Drawback on aprons manufactured by the E. B. Kursheedt Apron Co., of New York, with the use of imported laces and embroideries in combination with either imported or domestic cotton piece goods.

T. D. 34632. July 14, 1914. Drawback on dyed cotton piece goods. Drawback on dyed cotton piece goods manufactured by the Du Pont Fabrikoid Co., of Wilmington, Del., with the use of imported dyes and cotton piece goods imported in the gray.

T. D. 34633. July 14, 1914. Drawback on shoe cloth. Drawback on shoe cloth manufactured for the account of Julius Kallman Co., Boston, Mass., by the Windram Mfg. Co., Boston, Mass., with the use of imported worsted cloth.

T. D. 34635. July 15, 1914. Drawback on fabrikoid. Drawback on artificial leather, designated as fabrikoid, manufactured by the Du Pont Fabrikoid Co., Wilmington, Del., with the use of imported cotton piece goods and dyes and castor oil manufactured from the imported castor seeds.

T. D. 34640. July 15, 1914. Drawback on veils. T. D. 33987 of December 17, 1913, extended to cover ladies' veils manufactured by the D. Strauss Co. (Inc.), of New York, with the use of various imported materials.

T. D. 34645. July 15, 1914. China sheep's wool. Appeal directed from decision of the Board of United States General Appraisers of June 10, 1914. Abstract 35843 (T. D. 34548), involving the classification of merchandise returned by the appraiser as China sheep's wool.

Recent Textile Patents

BOBBIN HOLDER. 1,101,811. Burt A. Peterson, Rockford, Ill.

CARDING MACHINE Condensing Apparatus. 1,103,541. William D. Rundlett, North Andover, Mass.

CLOTH CUTTING Machine. 1,108,791. Maver R. Maimin, New York.

COMBING MACHINES, Bearing for the Drawing-off Rollers of Noble's. 1,102,834. John H. Whitehead, Leeds, Eng.

CLOTH CUTTING Machine. 1,104,143. George Scott, Amsterdam, N. Y.

FABRIC, Rotary Support for Rolled. 1,102,128. John A. Bastian, Philadelphia, Pa.

FABRICS an Imitation of the Irregular Curly Appearance of Astrakhan Fur and the Like, Mechanism for Producing upon the Surface of Pile. 1,102,484. James Dobson, Philadelphia, Pa.

HOSE REEL. 1,101,984. William M. Barrett, Shreveport, La.

HOSIERY, Device for Turning Welts on. William E. Chipman, Easton, Pa.

HUMIDIFYING APPARATUS. 1,101,901. William G. Braemer, Camden, N. J.

HUMIDITY CONTROL. 1,101,902. William G. Braemer, Camden, N. J.

KNITTED FABRIC. 1,103,589. Josef Kellner, Brooklyn, N. Y.

KNITTING MACHINE Cutting Mechanism. 1,103,922. Jacob H. Adamee, Durham, N. C.

LOOM ATTACHMENT. 1,103,661. Ignace Coulombe, Fall River, Mass.

LOOM PATTERN Chain. 1,102,669. Joseph Kay, Windhill, Eng.

LOOM WEFT Stop Motion. 1,102,610. Emil Stahl, E. Stroudsburg, Pa.

LOOM for Weaving Tufted or Chenille Fabrics or Carpets. 1,102,835. Fred A. Whitmore, Philadelphia, Pa.

LOOM SHUTTLE Tension. 1,103,097. Edward S. Stimpson, Hopedale, Mass.

LOOM. 1,102,110. Chas. D. Wahl, Philadelphia, Pa.

LOOMS, Thread Severing Mechanism for Automatic. 1,104,303. Albert G. Koechlin, Basel, Switzerland.

MOISTENING APPARATUS, Yarn. 1,103,806. Victor E. Mertz, New York.

SHUTTLE. 1,102,890. Willie G. Eaton, Nashua, N. H.

SHUTTLE THREADING Means. 1,103,414. George B. Hayes, Eagleville, Conn.

SHUTTLE, Hand Threading. 1,104,416. Nazaire Demers, Manchester, N. H.

SHUTTLE MECHANISM. 1,103,586. Azel C. Hough, Janesville, Wis.

SKEWER STEP for Creels. 1,101,875. Albert H. Morton, Lowell, Mass.

SPINNING MACHINE. 1,103,160. Arthur L. Schoelles, Newfane, N. Y.

SPINNING or Twisting Machine. 1,102,234. John Good, New York.

SPINNING, Twisting and Like Machines, Spindle for. 1,101,877. Albert H. Morton, Lowell, Mass.

SPINNING, Doubling and the Like, Flier Frame for. 1,103,194. Joseph S. Gaunt, Manchester, England.

SPINNING FRAME Roving Stop. 1,103,329. Edward J. Vales, Augusta, Ga.

SPINNING DRIVING Mechanism. 1,101,874. Albert H. Morton, Lowell, Mass.

SPINNING, Twisting and Like Machines, Thread Board for. 1,101,876. Albert H. Morton, Lowell, Mass.

SHUTTLE, Weft-moistening. 1,101,712. Emil Prein, Hanover, Germany.

WARP-TENSION Regulating Device. 1,104,377. Carl Moriggl, Arbon, Switzerland.

WOOL, Making Substitutes for Animal. 1,104,105. Candido Chavez, Mexico.

WEAVING, Velvet. 1,104,635. R. and J. Dantzer, Amiens, France.

WOOL CLEANING Machine. 1,101,562. John R. Milson, Watertown, Mass.

YARN for Colored Velvets, Producing Weighted Pile. 1,102,088. Peter Schmid, Basel, Switzerland.

TRADE MARKS RECENTLY FILED FOR REGISTRATION

73,935. Japanese cotton crapes. Mark: Three Stars. Owner: Samuel Samuel & Co., Yokohama, Japan.

77,477. Cloakings. Mark: "Waves of the Sea". Owner: The Miamus Mfg. Co., Coscob, Conn.

78,036. Woven cotton fabrics. Mark: Jagnagh. Owner: George A. Stafford, New York.

78,035. Woven cotton fabrics. Mark: Drilox. Owner: George A. Stafford, New York.

78,675. Cotton goods. Mark: Beacon. Owner: Beacon Mfg. Co., Providence, R. I.

78,786. Satin ribbon. Mark: "Classic". Owner: The Fair, Chicago, Ill.

79,177. Embroidery cotton, linen, silk, etc. Mark: Bigger-Than-Weather. Owner: F. A Patrick & Co., Duluth, Minn.

71,210. Carpets. Mark: Royal Wilton Velvet. Owner: Cochrane Mfg. Co., Dedham, Mass.

76,326. Terry cloth, etc. Mark: Rosco. Owner: F. Rosenstern & Co., New York.

76,446. Hosiery. Mark: Parasilk. Owner: Paramount Knitting Co., Chicago, Ill.

78,917. Ginghams. Mark: Marvel. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.

56,469. Mercerized cotton goods. Mark: Lin-None. Owner: Chas. K. Gleason, Philadelphia, Pa.

70,020. Sweaters. Mark: Broadway. Owner: Chas. Broadway Rouss, New York.

77,552. Knitted underwear. Mark: Belle-Fay. Owner: Chas. A. Powell, Whitesboro, N. Y.

77,596. Men's hosiery. Mark: American Mechanic. Owner: Rice-Stix Dry Goods Co., St. Louis, Mo.

78,005. Handkerchiefs. Mark: Excelsior. Owner: Herrmann, Aukman & Co., New York.

78,008. Handkerchiefs. Mark: Hoosier. Owner: Herrmann, Aukman & Co., New York.

78,010. Handkerchiefs. Mark: Prinsex. Owner: Herrmann, Aukman & Co., New York.

78,031. Woolen piece goods. Mark: M & H. Owner: Mason & Hanson, New York.

78,676. Quilts. Mark: Beacon. Owner: Beacon Mfg. Co., Providence, R. I.

79,004. Hosiery. Mark: Joy. Owner: J. W. Landenberger & Co., Philadelphia, Pa.

79,005. Hosiery. Mark: Frolic. Owner: J. W. Landenberger & Co., Philadelphia, Pa.

79,007. Hosiery. Mark: Chums. Owner: J. W. Landenberger & Co., Philadelphia, Pa.

69,517. Cotton and wool piece goods. Mark: Netherwood. Owner: Henry F. Scatchard Mfg. Co., Norristown, Pa.

69,813. Cotton and wool piece goods. Mark: Netherwood. Owner: Henry F. Scatchard Mfg. Co., Norristown, Pa.

69,813. Cotton piece goods. Mark: H H. Owner: Tremont & Suffolk Mills, Lowell, Mass.

78,534. Plushes and velvets. Mark: Plutex. Owner: The Salt's Textile Mfg. Co., Bridgeport, Conn.

78,536. Velvets and plushes. Mark: Esquinette. Owner: The Salt's Textile Mfg. Co., Bridgeport, Conn.

77,302. Unbleached muslin. Mark: Defiance. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.

77,334. Cotton piece goods. Mark: Vesper. Owner: Appleton Co., Lowell, Mass.

77,358. Velvets and plushes. Mark: Astratex. Owner: The Salt's Textile Mfg. Co., Bridgeport, Conn.

77,512. Cotton piece goods. Mark: Peggy. Owner: Massachusetts Cotton Mills, Lowell, Mass.

65,198. Worsted piece goods. Mark: Indian picture. Owner: U. S. Worsted Co., Boston, Mass.

69,060. Knitted underwear. Mark: Snow-Flake. Owner: J. H. Semel & Co., New York.

69,844. Cotton piece goods. Mark: Kub cloth. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.

69,846. Handkerchiefs. Mark: Seal-Sold. Owner: Corson, Pirie, Scott & Co., Chicago, Ill.

75,484. Hosiery, shirts, pants, etc. Mark: Semper Eadem. Owner: Moore, Eady & Murcott Goods, Ltd., Leicester, Eng.

76,178. Cotton twills. Mark: Line IN. Owner: Farnsworth, Hoyt & Co., Boston, Mass.

77,140. Cotton piece goods. Mark: Twill down. Owner: Appleton Co., Lowell, Mass.

77,319. Underwear of all kinds. Mark: Valace. Owner: Robert Reis & Co., New York.

77,320. Knit underwear. Mark: Komplete. Owner: Robert Reis & Co., New York.

77,599. Silk gloves and underwear. Mark: Radia. Owner: Schuylkill Silk Mills, Reading, Pa.

77,722. Silk, silk and cotton and satin piece goods. Mark: Furlana. Owner: Samuel Eiseman & Co., New York.

77,906. Knit and woven underwear. Mark: Setsnug. Owner: Avalon Knitwear Co., Utica, N. Y.

77,923. Petticoats, princess slips, underwear, etc. Mark: De Luxe. Owner: Harris Bros. & Barnett, New York.

55,559. Thread for sewing purposes. Mark: Twist-De-Best. Owner: Eastern Thread Co., New York.

69,977. Cotton and linen piece goods. Mark: Domremy. Owner: Turtle Bros., New York.

76,717. Muslin underwear. Mark: Fairy. Owner: Aaron Ratner, New York.

76,718. Muslin underwear. Mark: Cinderella. Owner: Aaron Ratner, New York.

76,990. Billiard cloths, uniform cloths, etc. Mark: Falcon. Owner: Faulkner & Colony Mfg. Co., Keene, N. H.

77,324. Cotton duck cloth. Mark: Magnolia. Owner: West Point Mfg. Co., Langdale, Ga.

77,411. Hosiery. Mark: Leather stocking. Owner: Durham Hosiery Mills, Durham, N. C.

77,465. Hosiery, sweaters, underwear, etc. Mark: Wellworth. Owner: Wellworth Mills Co., Minneapolis, Minn.

77,533. Knit and woven underwear. Mark: Indera. Owner: Indera Mills, Winston-Salem, N. C.

77,872. Velvets and plushes in the piece. Mark: Lambette. Owner: The Salt's Textile Mfg. Co., Bridgeport, Conn.

The Corriher Mills Co., Landis, N. C., will install for electric drive eleven motors ranging from 2 h. p. to 25 h. p., switches, switchboard, etc. The equipment will be furnished by the General Electric Company.

Massachusetts, Adams. Adams Bros. Mfg. Company, manufacturers of cotton yarns, are installing nine new spinning frames of 216 spindles each, replacing old equipment. Last year new machinery was installed in the carding department.

North Carolina, Selma. The Selma Cotton Mills will install electric drive equipment in their new addition. As noted recently, this company began the construction of an addition in May which will be equipped with 5,280 spindles for making 18s to 24s hosiery yarns, and will be completed in October. N. E. Edgarton is president and buyer; W. H. Call, secretary and treasurer; and A. J. Rose, superintendent.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON
GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

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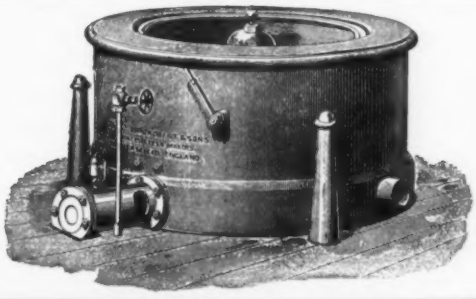
PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



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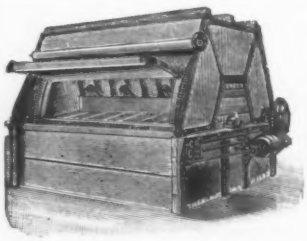

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2 MONTH'S TRIAL
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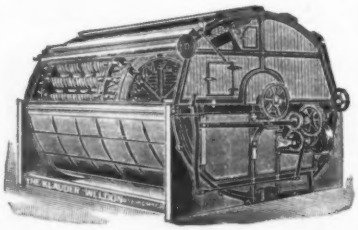

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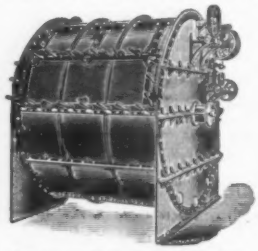
KLAUDER-WELDON DYEING MACHINE COMPANY

HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



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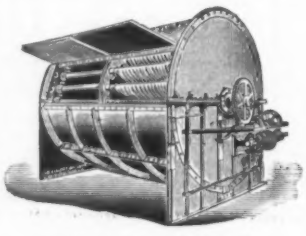
Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

WHEN YOU WANT LOOM HARNESSES

In a Rush

We pay particular attention to orders for loom harnesses which are wanted in a limited time. We give these orders precedence and ship the harnesses without fail on the date specified in the order. You will not be disappointed in delivery if you send us your "hurry up" orders.

GARLAND MFG. CO.
Saco, Maine

TRADE MARK

Buyers' Index

This department is conducted for the benefit of our subscribers. The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under headings to which they are entitled will please notify the publishers.

Accountants and Systematizers.
Gunn, Richards & Co.

Air Moistening System.
——See Humidifying Apparatus.

Architects and Mill Engineers.
Cramer, Stuart W.
Dyer, W. E. S.
Ferguson, John W.
Main, Chas. T.
Myrick, J. W. H.

Asbestos Covering.
Johns-Manville Co., H. W.
Keasbey, Robert A.

Asbestos Products.
Johns-Manville Co., H. W.
Keasbey, Robert A.

Asphalt Tanks.
Scaife, W. B., & Sons.

Autophones.
Couch, S. H., Co., Inc.

Automatic Feeds for Cotton and Wool.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Saco-Lowell Shops.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Mch. Co.
Woonsocket Machine & Press Co.

Bale Presses.
Saco-Lowell Shops.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy. Co.
Smith & Furbush Mch. Co.

Ballers.
Saco-Lowell Shops.

Ball Bearings.
Hess Bright Mfg. Co.
S. K. F. Ball Bearing Co.

Bandings.
Lambeth Rope Corporation.
Sternberg, Fred, & Co.

Baskets.
Diamond State Fibre Co.
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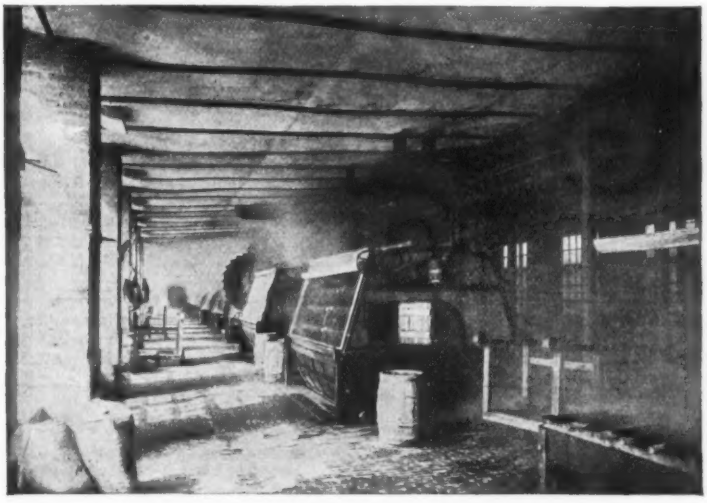

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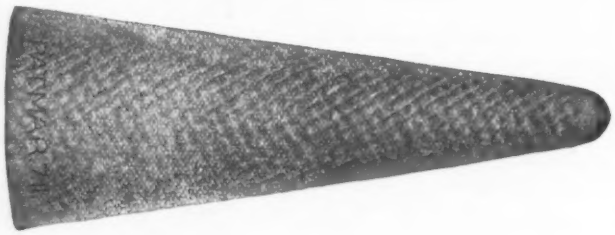

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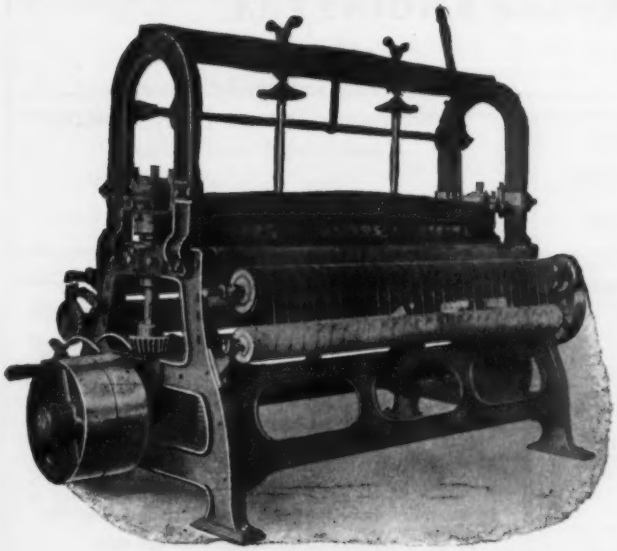

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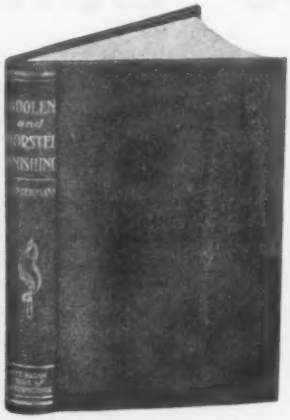

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Money-Saving, Money-Making Opportunities

WANTS, FOR SALE, ETC.

This is a special department for those who wish to buy or sell second-hand machinery, mills or mill sites, patents, etc., and for such advertisements as "Help" or "Situations Wanted." A special low rate is charged, viz., $1.00 for one-half inch, single column; $2.00 for one inch, single column, and in the same proportion for larger space. By measuring these advertisements and counting the words you will see what space is needed for your announcement. No advertisement accepted for less than $1.00. Remittance should accompany the order. No extra charge for forwarding replies sent in care of the Textile World Record.

Address: Want-Ad Dept., Textile World Record, 144 Congress Street, Boston, Mass.

Artificial Silk

I am desirous of getting in touch with parties using artificial silk thread waste for spinning purposes.
I am at all times in the market to buy or sell "job lots" of yarn, silk threads, garnetted waste, noils, clippings, etc.

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P. O. Station "S" **32 Ditmars St., Brooklyn, N. Y.**

OFFICE MAN WANTS POSITION

Thorough all-round clerical experience, executive training, accounting bookkeeping systemizing in textile mills. Now with large corporation in Mass. Will locate anywhere for progressive position. Good references. Age 33, married. Address Office Man, Textile World Record, Boston, Mass.

SPINNING WANTED

Custom Spinning, Woolen and Merino Yarns 4 to 25 cut.

PARKER WOOLEN MILLS, PARKERS LANDING, PA.

Knitting Mill For Sale.

A knitting mill running in good order with many orders on hand must be sold on account of owner's ill health. The mill will be sold at a very low price. City has good railroad and water facilities. Population 110,000. Correspondence invited. Address "Plant Sale", Textile World Record, Boston, Mass.

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One 2500 H. P. Rice & Sargeant 28" x 56" x 48" Horizontal Cross Compound Corliss Engine. Fly Wheel Type. 10" steam line, 150 pound pressure, 116 R. P. M. First class condition. Made by Providence Engineering Works. **Duquesne Light Co., Pittsburgh, Pa.**

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For Bleaching, Dyeing and Printing Rollers. Prompt delivery in any quantity. All consignments made direct from Adirondack Woods. Write for prices.

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HARDING & FANCOURT, Inc.

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Soaps of Quality, Turkey Red Oil, Tuscan Softener, Soluble Oils and Olive Oil

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Trustee's Sale of Hosiery Mill

The Pennsylvania Trust Company, Trustee will sell at public sale on Wednesday, August 19, 1914 at 2 o'clock P.M. on the premises the property of Pennsylvania Knitting Mills Co., Lessor and Crescent Hosiery Mills, Lessee, including a large three-story brick building, two-story brick dye-house, etc., suitable for general manufacturing purposes, erected on the said lot, situate on the west side of Maple Street, between Chestnut and Spruce Streets, in the City of Reading, County of Berks and State of Pennsylvania. Containing in front on said Maple Street two hundred feet and in depth of that width one hundred and five feet more or less to said ten foot alley, together with the boilers, engines, main belt, belts on counter-shafts and elevators, wire transmission rope, shafting and pulleys thereon, elevators, steam, gas, water pipes and fixtures, ovens, fire alarm wires and watchman's clock and electric light plant contained in and located upon the above described premises.

THE PENNSYLVANIA TRUST CO., Trustee,
536 Penn Street, Reading, Pa.

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An Economical Seller of Textile Machinery

A Philadelphia textile manufacturer (name on request) bought a textile machine costing about $600 00 and later on decided to sell it. He sent us an order for a 1 inch single column advertisement which ran three times in the Textile World Record at a total cost of $6.00.

When we wrote to find out whether or not he wanted the advertisement run the fourth time he replied as follows:

"Referring to your letter in reference to our advertisement, would say we have sold this machine through the advertisement in your paper."

If you have any second-hand machinery or equipment to sell that can be used in textile mills, perhaps, a 1 inch ad run one or more times on this page would sell it for **you.**

Address "Want Ad Dept."

Textile World Record

144 Congress St., Boston, Mass.

WANTED

Energetic man with constructive imagination, familiar with textile machinery and capable of applying his knowledge to the solution of problems in industry comparatively unexplored. Capacity for executive work and organization would increase usefulness. Good salary and exceptional opportunity for right man. Address "Energetic," Textile World Record, Boston, Mass.

Wanted—Position as Styler or Salesman

in a commission house by a progressive young cotton mill superintendent, who has had 18 years practical experience. Thoroughly understands yarns and fabric construction and designing. Address M. L., care of Textile World Record, Boston, Mass.

Silk Hosiery Superintendent Wants Position

A man of broad practical experience in the manufacture of full fashioned hosiery, who thoroughly understands its every detail, and is fully competent to take charge of either a seamless or full fashioned hosiery mill, would like to communicate with any mill owner seeking such a superintendent. Is at present holding a highly responsible position, but has good reasons for desiring a change. Unquestionable references as to ability and character. Address Competent Superintendent, care of Textile World Record, Boston, Mass.

Wanted—Capable Manager

to invest $6000.00 and take full charge of only Knitting Mill in state, with best future before it
For full particulars address M. H. Aved, Fargo, N. Dak.

Superintendent Wanted

WANTED—Superintendent of mill making high class woolen and worsted underwear. A man thoroughly uuderstanding knitting and finishing. None but men of good record need apply, and to such a good salary will be paid. Address "Underwear," Textile World Record, Boston, Mass.

We will Handle all Your Drafting and Designing for a Low Monthly Rate

Send for our time contract plan and cut down your drafting expense on special machines and tools.
Our line of calculating charts will interest you.

The S. C. Carpenter Drafting and Engineering Co.
49 Oakland Terrace, Hartford, Conn.

Position Wanted as Superintendent

Where a wide experience would be useful. Have had experience on white, colored, plain and fancy carded and combed cotton yarns and goods. Have good executive and organization ability. First-class habits and references. Would take a position to study the needs of a plant and make recommendations from a practical point of view. Address "Superintendent," care of Textile World Record, Boston, Mass.

FOR SALE

2 McCreary Nappers, for sweater and similar goods.
30 Crompton K. Looms; Motor Drive, 64 in. reed—4x4 box, 20 har.
80 Crompton & Knowles Cam Looms, 72 in. reed, 6 harness, 1x1 box.
2 D. & F. Double Cards, 48x48, Bramwells.
1 Sargent Wool Washer, 36 in, 3 bowls, Self Feeds.
Nappers:—Davis & Furber and Green. One each: 90 in.—16 roll, and 72 in.—14 roll.
Cards:—3 sets (of 2 Cyls. each) 60x60. With camel back lapper, for batts. Sell with or without lapper.
ROBT. DUNNING, East Lynn, Mass.

MILL FOR SALE

at Salem, N. Y., on D. & H. R. R., with abundant WATER POWER all year. Fire protection system. A bargain on easy terms. Well adapted for knitting mill.

J. P. GORMAN
1269 Broadway - New York

Situations Wanted

Manufacturers who are in need of Superintendents or Overseers for any department of mill work may learn of suitable men upon application by mail or telephone to C. T. DONLEVY, care Textile World Record, 144 Congress Street, Boston., who will give prompt attention to their requirements without charge.

Overseer of Weaving in cotton mill; has worked on anything in the line of cotton goods; familiar with almost any kind of machinery; 45 years of age, married; will not go West, South or to Canada; good reference.
6247, Textile World Record, Boston, Mass.

Assistant Agent, superintendent or assistant superintendent in cotton mill; would consider good mechanical position in cotton mill also; has worked on sheetings, domets, flannels, table felts, mole skins, ounce goods, etc.; familiar with carding, spinning and weaving machinery; 28 years of age, married; good reference.
6248, Textile World Record, Boston, Mass.

Assistant Superintendent of carpet mill; has worked on worsted and woolen yarn manufactured from bale to finished yarn; also all classes of carpet wools; will go anywhere for a good position; 26 years of age; good reference.
6249, Textile World Record, Boston, Mass.

Overseer of Plush Finishing; has worked on plush, velvets, seals and beavers; familiar with plush and velvet finishing machines, all classes; 50 years of age; will go anywhere for a good position; good reference.
6250, Textile World Record, Boston, Mass.

Designer in Cotton Mill or boss weaver and designer; has worked on cotton, silk and worsted dress goods, jacquards, damasks, table covers, bed spreads, narrow fabrics, dress and corset trimmings, elastic goods, silk labels and belt covers; familiar with jacquard and dobby looms; understands fixing and tying up of jacquard harness cutting cards; warp dressing and long chain beaming, also finishing of cotton goods; 42 years of age, married; will not go to Canada; good reference.
6251, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen or worsted mill; has worked on all kinds of woolen and worsted goods; familiar with all kinds of finishing machinery; 50 years of age, married; will not go West, South or to Canada; good reference.
6252, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on all grades of raw stock, wool, shoddy, cotton and silk; piece dyes, heavy and light worsteds, dress goods, unions, chinchillas and worsted yarns; understands the principles and advantages of most dyeing machines; 27 years of age; good reference.
6253, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on all kinds of goods and is familiar with English and American makes of machinery; will not go to Me., Pa., N. Y., N. J., West, South or to Canada; 49 years of age, married; good reference.
6254, Textile World Record, Boston, Mass.

Designer; has worked on cotton, half wool and half silk goods; familiar with all machinery used in Europe; 36 years of age; married; good reference.
6255, Textile World Record, Boston, Mass.

Second Hand of Card Room in woolen mill; would consider small boss carding position; has worked on all kinds of goods; 30 years of age, married; familiar with almost all kinds of machines; good reference.
6256, Textile World Record, Boston, Mass.

Fixer on Hosiery Machines; has worked on worsted and cotton hosiery; familiar with George D. Mayo, Standard, Scott & Williams half hose machines; good reference.
6257, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on men's wear, overcoatings, cloakings, dress goods, worsted, woolen and cotton; familiar with Knowles and Crompton looms; 50 years of age, married; will not go South or to Canada; good reference.
6258, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on worsted, woolen, cotton worsted and piece dye goods, kerseys and meltons; familiar with Birch Bros., Parks & Woolson, Rodney Hunt and Davis & Furber machines; 32 years of age, married; will not go to Vt., Pa., South or to Canada; good reference.
6170, Textile World Record, Boston, Mass.

Overseer of Dressing, spooling, winding, reeling and twisting in woolen mill; has worked on plain and fancy woolens and worsteds; familiar with all kinds of machinery; 33 years of age, married; will not go South; good reference.
6262, Textile World Record, Boston, Mass.

Superintendent of woolen mill, or superintendent and designer; has worked on fancy and piece dyed worsted suitings; familiar with worsted, carding, combing, weaving and finishing machinery; 50 years of age; married; will not go West, South or to Canada; prefers Philadelphia; good reference.
6261, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving; has worked on all kinds of cotton goods; familiar with Draper, Lowell, Whitin, Crompton and Mason looms; 48 years of age, married; will not go West, South or to Canada; good reference.
6260, Textile World Record, Boston, Mass.

Designer or assistant designer in woolen mill; has worked on woolens, worsteds, cottons and silks; familiar with all kinds of looms; 25 years of age; good reference.
6259, Textile World Record, Boston, Mass.

Cotton Mill Master Mechanic; is familiar with cotton machinery in general, engines, boilers, turbine water wheels, etc.; 38 years of age, married; will not go to Pa., West, Canada or Vt.; good reference.
6245, Textile World Record, Boston, Mass.

Sewing Machine Fixer or foreman of finishing room; has worked on balbriggan, ribbed, wool, mercerized and silk underwear in ladies' and men's; familiar with the Singer, Union Special, Merrow, Metropolitan and Union button sewing machines; 31 years of age, married; will not go to Mass., Me., N. H., Vt., Pa., N. J., West, South or Canada; good reference.
6246, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all kinds of worsted suitings and dress goods; familiar with Crompton & Knowles looms; 41 years of age, married; will not go to Me., N. H., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6171, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen or worsted mill; has worked on all grades of kerseys, broad cloths, carriage cloths, dress goods, meltons, cheviots, chinchillas, worsteds, cotton mixed goods, piece dyes and wool dyes; familiar with all makes of machinery; 44 years of age, married; will not go West, South or to Canada; good reference.
6172, Textile World Record, Boston, Mass.

Overseer, superintendent, or agent in bleachery and finishing plant; overseer in cloth room or finishing room in cotton mill; has worked on all classes of cotton goods; has had experience in bleacheries on heavy clay filled work such as sign cloth, bag goods, shoe linings and muslins; 46 years of age, married; familiar with all makes of machinery; good reference.
6173, Textile World Record, Boston, Mass.

Overseer of Weaving in cotton mill; has worked on prints, fine lawns, plain umbrellas with tape selvage; familiar with Kilburn & Lincoln, Mason, Crompton & Knowles plain looms; will not go to Pa., N. Y., N. J., West, South or to Canada; 43 years of age, married; good reference.
6195, Textile World Record, Boston, Mass.

Agent or superintendent and agent in woolen mill; would consider position as styler for commission house; has worked on all grades of woolen and worsted goods; familiar with all makes of machinery; good reference.
6196, Textile World Record, Boston, Mass.

Overseer of Finishing or finishing and dyeing in woolen mill; has worked on woolens, worsteds, piece dyes, dress goods, of all kinds; cottons and cotton worsteds, in fact most everything; familiar with most all makes of machinery; 28 years of age, married; will not go West or to Canada; good reference.
6197, Textile World Record, Boston, Mass.

Second Hand of Carding and combing rooms in cotton mill; has worked on most all kinds of goods from long and short cotton, making fine and coarse yarns, filling and warping; familiar with Kitson pickers, Whitin, Saco & Pettee, Hetherington, Howard & Bullough cards, doublers, combers and speeders; 29 years of age; good reference.
6198, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on piece dyeing and raw stock; will not go to Pa., West, South or to Canada; good reference; 50 years of age, married.
6199, Textile World Record, Boston, Mass.

Overseer of Dyeing or superintendent in woolen mill; has worked on all classes of woolens, worsteds, knit goods, hosiery, stock and yarn on the dyeing end and on fancy and plain piece dyes on manufacturing; familiar with all modern textile machinery from the yarn up; partially on yarn carding and spinning; 39 years of age, married; good reference.
6200, Textile World Record, Boston, Mass.

Superintendent, assistant superintendent or overseer of spinning, spooling and warping in cotton mill; has worked on both fine and coarse numbers; familiar with both English and American makes; 43 years of age, married; will not go South or to Canada; good reference.
6176, Textile World Record, Boston, Mass.

Overseer of Ring Spinning in cotton mill; would consider second hand position; has worked on combed, carded, Peeler, Sea Island, cotton waste, Egyptian and all short stock; familiar with Fales & Jenks, Saco & Pettee, Whitin, Mason, Howard & Bullough and Lowell frames; 24 years of age; good reference.
6177, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Massachusetts, North Dighton. Good progress is being made on additions to the plant of the Mount Hope Finishing Company.

*Massachusetts, North Oxford. Several looms have been started up on samples by the new Hewett Textile Company in the old plant of the Narragansett Worsted Mills. Samples of worsted goods and plush goods are being made.

*Massachusetts, Peabody. Repairs will be made at once on one of the engines at the Danvers Bleachery & Dye Works which was damaged last week and the cylinder destroyed. It is expected the engine will be running again by July 21. The plant is running as usual.

Massachusetts, Smith's. It is reported the Swift River Mill, manufacturers of all wool fancy cassimeres, is running out stock, on account of lack of orders.

Massachusetts, Saundersville. A notice of closing recently posted by the Saunders Cotton Mills has been cancelled on account of a rush of orders. The mill was to shut down the first two weeks in August. Employes who have made plans for vacations will be allowed to go if arrangements can be made.

Massachusetts, Webster. Contractors are figuring on plans for two more additions to the plant of S. Slater & Sons, Inc., to be used as a storehouse and for converting purposes. The plans have been made by Chas. T. Main, Boston.

Massachusetts, Webster. The plants of the Perry Woolen Company and the Stevens Linen Works have resumed manufacturing after the recent shut down. While the plants were closed repairs were made on the machinery.

*Massachusetts, Worcester. The American Fiber Company, whose organization was recently noted, controls processes for manufacturing packings and similar fiber goods which it will either continue to manufacture or license other manufacturers to make on a royalty basis. The office is at 306 Main St. The factory is at 24 Washington St. Edmund R. Ware is president and buyer.

New Hampshire, Hillsboro. The Hillsboro Woolen Mill Company has resumed manufacturing after a shut down of three weeks to make necessary repairs, including the laying of new floors. The concern is well supplied with orders.

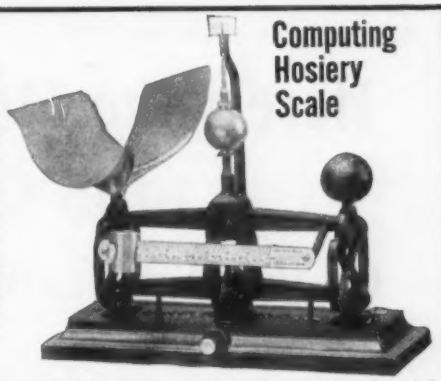
New Hampshire, Manchester. Notices have been posted by the Amoskeag Mfg. Company and the Stark Mills of the International Cotton Mills that the plants of these companies will shut down August 28 and remain closed until September 8. The Amoskeag Mills are running to full capacity and continued night work is necessary to keep up with the demand.

New Hampshire, Meredith. The capital stock of the Meredith Linen Mills has been increased from $160,000 to $175,000.

New York, LeRoy. The LeRoy Division of the Bay State Cotton Corp. is shut down for two weeks to make some changes in the machinery.

Computing Hosiery Scale

No. 4020 TORSION BALANCE



Place pair of hose in holder and slide weight on beam until scale balances. Slide weight indicates weight per pair and also weight per dozen pairs. If specified can equip the balance with beam to one pound for UNDERWEAR. Write for Textile Folder.

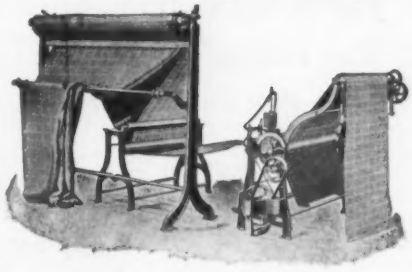
THE TORSION BALANCE COMPANY
Factory, Jersey City, N. J. Office, 92 Reade St., New York

The Metallic Drawing Roll Co.
INDIAN ORCHARD, MASS.
MANUFACTURERS OF
Metallic Rolls

Especially adapted for Cotton Mills. 25 to 33 per cent more Production Guaranteed. Weight Reduced 33 to 50 per cent. No Leather Covering Bill.

WRITE FOR PARTICULARS

Wool Burring and Picking Machinery
Cloth Finishing Machinery

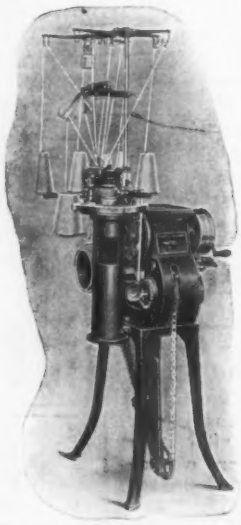


DOUBLING AND TACKING MACHINE

CURTIS & MARBLE MACHINE CO.
Worcester, Mass.

Here's the Machine that Saves 7 to 15 Cents a Dozen

On the Manufacturing Cost of Half Hose



IMPROVED MODEL F MACHINE

There is **no expensive skilled labor** required **in the operation of our Model F** machine for the production of half hose in all qualities and from any material.

The **saving effected** ranges from **7 to 15 cts.** per dozen.

Isn't this worthy of consideration ?

Established 1805

SCOTT & WILLIAMS, INC.

88 PEARL STREET
BOSTON

NEW YORK PHILADELPHIA UTICA

KNIT.

New Mills.

Canada, Ontario, Ingersoll. Five new knitting machines and several finishing machines, for the manufacture of underwear, are being added to the equipment of Thomas Waterhouse & Co., Ltd.

Delaware, Wilmington. An equipment for the manufacture of men's cotton knit underwear has been installed at 102 E. 4th St., by parties who are operating under the name of the Comet Manufacturing Company. The incorporation of this company with capital stock of $50,000 by Samuel Greenbaum, Herman Stetcher and Nathan Brallman was noted earlier in the month.

*Maryland, Hagerstown. The plant of the Windsor Knitting Company, which was recently destroyed by fire, will be rebuilt immediately. This company manufactured men's fine seamless half hose. H. J. Crosson is superintendent.

New Hampshire, Nashua. Honore Caron, 15 Gilman St., is constructing a building in which he will install knitting machines for manufacturing stockings, sweaters and other knit goods. Mr. Caron expects to begin operations in August.

New Jersey, Passaic. Paul Guenther, Inc., manufacturing men's and women's fashioned silk hosiery, at Dover, has purchased fourteen acres of land bordering on the Lackawanna R. R. tracks, and a 4-story brick building is in process of erection. No details can be given out at present. This is a new branch of the Dover plant and in no way affects the operations in Dover.

Nebraska, Deshler. Construction work was started on a building for the Deshler Knitting Mills on July 6th and equipment will be installed to manufacture hosiery and men's, women's and children's knit goods, beginning operations about Jan. 1, 1915. The project was started by a government school teacher in Austria, near Chemnitz, and will employ a number of foreign people. The machinery will be imported largely from Austria.

*North Carolina, Elizabeth City. The building under construction for the new Pasquotank Hosiery Co. will soon be completed. It will be one story high, 150 by 50 feet, and will be equipped to manufacture hosiery. This company was organized several months ago with capital stock of $50,000. Noah Burfoot, a local business man, is president; F. V. Scott, vice-president, and Dennis Van Horn, manager.

Pennsylvania, Carbondale. Clyde M. Faatz and a Mr. Wenzel are establishing a new knitting plant for the manufacture of sweaters and fancy knit goods at 43 Williams Ave., under the name of Faatz & Wenzel. Business will be started on a small scale with 5 knitting machines, but they expect later to establish a larger plant. Electric power will be used. They would like to get in touch with salesmen or a selling house handling their lines of men's, women's and children's goods.

*Pennsylvania, Newcastle. The new company recently organized under the name of the New Castle Knitting Mills is organized with W. H. Grove, treasurer, and Mr. Grove with Robert A. McKinney, O. P. Brown, A. L. Thayer, Charles Greer, J. W. Neff, Edward W. Beadle, J. C. McCready, and D. S. Pyle, form the Board of Directors. This new concern will have capital stock of $100,000, of which $75,000 has been subscribed, and will manufacture hosiery and other knitted fabrics, selling the output to jobbers. An option has been taken on a building on South Mill St., formerly occupied by the Standard Wire Company. A new boiler house and dye house will be added to the building and it is expected to start operations in October. J. N. Wood, and Samuel M. McCracken, at present connected with one of the large knitting mills in the East, have been secured as general manager and superintendent of the plant.

Pennsylvania, Philadelphia. N. Neuman, superintendent and member of the firm of Titelman & Neuman, operating the Puritan Knitting Mills of Pa., at 313 Arch St., has recently severed his connection with the concern and is arranging for the purchase of machinery for the equipment of a plant for manufacture of high grade sweater coats at an address which at this time it is impossible to secure. The Puritan Mills will be continued at the old address by Mr. Titelman.

Pennsylvania, Reading. Bert W. Wilson, formerly of Reading, is looking for a suitable site at Hyde Crest, a suburb of Reading, to erect a plant for the manufacture of hosiery.

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Enlargements and Improvements.

Connecticut, Winsted. An addition is being built to the plant of the Winsted Hosiery Company for a carpenters' building. The Torrington Construction Company has the contract.

Georgia, Grantville. Work will be started August 1 on an addition to the plant of the Grantville Hosiery Mills, 220 feet long by 100 feet wide, of brick construction, with tar-concrete floor and tar-gravel roof. The power house will be enlarged and remodeled, improvements made to the power machinery, and a new engine installed, including condensing equipment, heater, pumps, etc. It is planned to add 5,000 spindles. This company manufactures seamless cotton hosiery on present equipment of 5,000 spindles, 150 latch needle machines, 30 ribbers and 12 loopers. W. N. Banks is president and buyer; Glenn Arnold, treasurer; Emmett Sewall, secretary; and J. F. Brasch, superintendent. Park A. Dallis Company, engineer-architect, of Atlanta, are in charge of the improvements.

Maryland, Frostburg. Ten additional knitting machines are being installed in the local plant of the Parker Hosiery Mill & Dye Works and further increases will be made until forty new machines have been added.

*Maryland, Hagerstown. The work of rebuilding the Antietam Knitting Co. has already begun and arrangements will be made for new equipment at once. Pressing orders are being taken care of by the branch at Hancock. The plant was recently burned with a loss of about $75,000.

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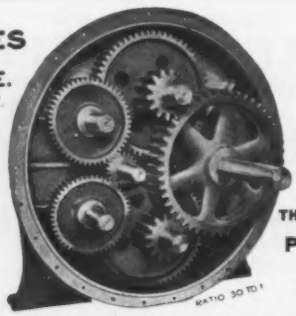
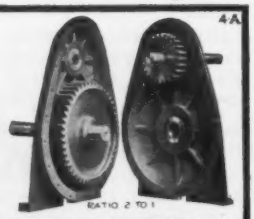
SPEED REDUCING DEVICES
TO CONNECT
HIGH SPEED MOTOR TO MACHINE.
GEARS RUN IN OIL. CASES DUSTPROOF
OTHER TYPES





THE A. & F. BROWN CO.
POWER TRANSMISSION
MACHINERY
79 BARCLAY STREET
NEW YORK
SPECIAL MACHINERY BUILT TO PLANS AND SPECIFICATIONS

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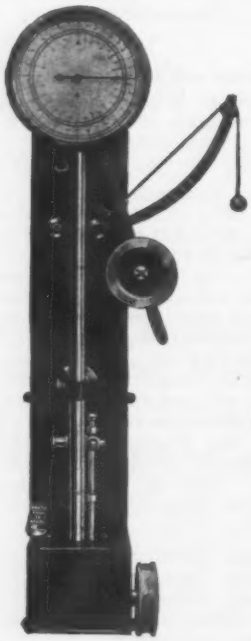
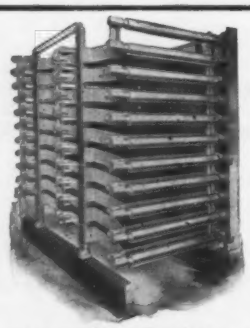
POWER YARN TESTER
PATENTED



Manufactured by
HENRY L. SCOTT & CO.
223-233 Eddy St., Providence, R.I.
Send for Catalogue C

Steel Heddle Mfg. Co.
WORLD'S LEADING
MANUFACTURERS OF
Flat Steel Heddles and Frames
Drop Wires and Heddles
Reed Wire
Doup Heddles
Duplex Heddles
Specialists in Metal Punching
2110-18 West Allegheny Avenue
Philadelphia, Pa.



The
Cell Drier
is recognized as the most modern and efficient drier on the market.
It is used by the leading finishers because it operates at the highest speeds and at low cost. It saves steam, power and space. Let us tell you more about it.
Cell Drier Machine Co.
TAUNTON, - MASS.

MISCELLANEOUS.

*Georgia, Dublin. It is reported that the Oconee River Mills will not rebuild their plant which was destroyed by fire several weeks ago. The plant has been shut down for some time and the water works system of the plant was out of order. The Oconee River Mills manufactured cotton goods and had equipment of 18,000 spindles and 225 looms.

Georgia, Winder. The Barrow County Cotton Mills have been incorporated with capital stock of $125,000 by L. S. Radford, J. M. Williams and R. S. Lanier. Messrs. Radford and Williams have been operating the Winder Cotton Mills under lease.

*Kansas, Hutchinson. No definite action has been taken in the matter of establishing a twine plant at the Hutchinson State Industrial Reformatory, nor can any action be taken until the meeting of the legislature in 1915. It is true, as reported previously, that the superintendent and the penal board have recommended the establishment of this plant. J. N. Herr is the superintendent.

*Kansas, Kansas City. The new Wyandotte Cotton Mills Company, recently organized with capital stock of $125,000 to take over the Kansas City Cotton Mills, has received the deeds to the property. L. L. Seibel is president of the new company and A. W. Peet, secretary and treasurer. Mr. Peet is also chairman of the committee of bondholders. No plans are announced as to the disposition of the mill property or its use by the new company.

Kentucky, Louisville. Ira F. Phillips, formerly superintendent of the Louisville Cotton Mills Company, is promoting a new cotton mill company to occupy the building formerly used by the Hope Worsted Mills. Mr. Phillips' address is 2511 Ramsdell Ave., Louisville, Ky.

*Massachusetts, Amesbury. It is reported that part of the machinery in the Hamilton Woolen Company's idle plant has been sold and that the buildings are being offered for sale.

Massachusetts, Chicopee Falls. Building permits have been granted contractors for alterations on the plant of the Hampden Bleachery, to cost about $2,600.

Rhode Island, Anthony. The Coventry Company will install about 1,300 new warp spindles and some drawing equipment in the carding department of the local mill. The main plant of this company is at Providence.

Rhode Island, Natick. Practically all the mules in the Natick Mills of B. B. & R. Knight have been replaced with ring frames. Seven new spinning frames arrived during the week and it is stated that all of the mules will be taken out by the first of August.

Rhode Island, Providence. The new building for the Colored Worsted Company is nearly ready for the installation of machinery. The building is 200 by 48 feet, 3 stories high. It will be used to increase the spinning, twisting and drying departments, and about 150 operatives will be employed.

Durant Counting Systems

We do more than sell you counting machines. We sell you SERVICE, which means information and help that will make your counting machines of more value to you. We want to help you solve your counting troubles, whether you have one machine or hundreds.

Write us about your troubles and your problems. Maybe some other firm has solved the very question you are up against. If we can not tell you at once, we'll start an investigation that will get the information for you.

DURANT COUNTERS

are profit makers in textile mills. Give definite check on *men, machines* and *methods*. Large figures, easily read, easily set. Simple and reliable construction. *Write us today for help on that counting problem. Ask for Catalog No. 20.*

W. N. DURANT CO., Milwaukee, Wis.

"SAFETY FIRST"

Allen Safety Set Screws Prevent Accidents

Many thousands are killed or maimed for life each year by projecting heads of set screws. You can prevent such accidents by using

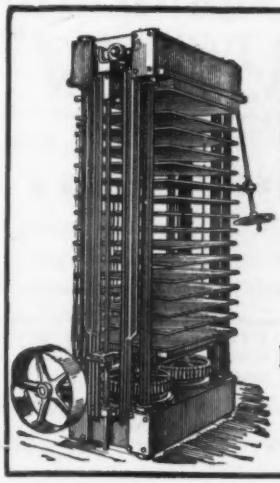
ALLEN SAFETY SET SCREWS

Write for price list No. 6 and free samples for testing.

The Allen Manufacturing Company

135 Sheldon St., Hartford, Conn.

Canadian Factory, St. Johns, P. Q., Canada



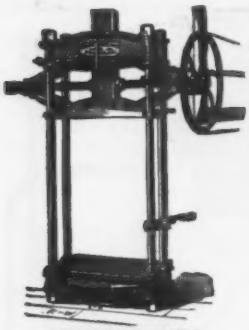
Reliance Hot Plate Press

For Hosiery and Underwear Trade

For price and particulars address

Reliance Machine Works

Hedge and Plum Sts.
Frankford, Phila., Pa.



KNUCKLE JOINT

Boomer & Boschert

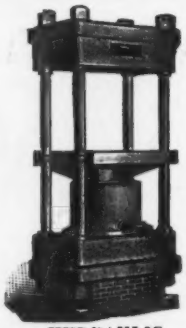
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size Any Power

Boomer & Boschert Press Co.

338 WEST WATER ST., SYRACUSE, N. Y.



HYDRAULIC.

ASHWORTH BROS.,

MANUFACTURERS OF

Card Clothing of Every Description

FALL RIVER, MASS.

SAVE
Their Cost
In Freight

THE CHAFFEE PATENT CLOTH BOARD,
Made of paper and wood,
Needs no covers,
Will not split or warp;
Not liable to break.
BOX SHOOKS and CLOTH BOARDS.

MFG. BY
CHAFFEE BROTHERS COMPANY,
OXFORD, MASS.

Clean
LIGHT
Strong

Thread and Silk SPOOLS of any description

Made from one piece, up to 6″ long and 3″ dia.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted

E. L. Tebbets Spool Company, Locke's Mills, Maine

Parker Spool and Bobbin Company

FORMERLY AT LOWELL, MASS.

LEWISTON - - MAINE

JOHN E. KENDRICK, President MYRON FISH, Treasurer M. C. FISH, Secretary

American Supply Co.

Manufacturers of Reeds, Harness, Belting and General Mill Supplies

We make a specialty of Harness for American Warp Drawing-in Machine

OFFICE and STORE—135-137 Washington St., Providence, R. I. FACTORIES—Central Falls, R. I. and Fall River, Mass,

DIXON PATENT STIRRUP ADJUSTING SADDLE

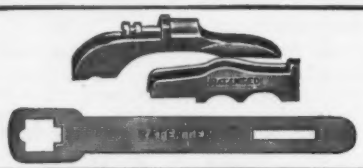
1,200,000 pairs now in use

Best Saddle for Top Rolls of Spinning Frames

Send for Samples

DIXON LUBRICATING SADDLE CO., Bristol, R. I.

Manufacturers of all kinds of Saddles, Stirrups and Levers



FACTS AND GOSSIP.

*New Jersey, Passaic. The Tuxedo Mills (Inc.) whose organization was noted several weeks ago, have leased quarters at Center Ave. and Summer St., as stated in a previous report and are manufacturing men's and women's wear, fancy worsteds and vestings, on an equipment of forty-nine looms. H. L. Patterson is treasurer and buyer.

New Jersey, Paterson. An explosion of one of the cylinders of a finishing machine partly wrecked the machinery in the plant of the Central Silk Finishing Company, located in the Murray Mill. One man was killed and another injured.

New Jersey, Paterson. Benjamin Lesser, of Brooklyn, is advertising in the Paterson Press for a 150-loom silk plant, which he is willing to buy.

New Jersey, Paterson. Stern & Pohly have sold the looms on one floor of their plant in the Highland Mill and will rent the space to a tenant.

New Jersey, Paterson. A new concern has been organized under the name of the Paterson Cop Winding Company with capital stock of $20,000, to carry on a business of warping and winding cotton, silk and other materials. The incorporators are Frederick Huber, John J. Bower and William Thompson.

New Jersey, Paterson. The Diamond Silk Company has been incorporated with capital stock of $150,000 to manufacture, buy and sell silk. The incorporators are Wolf Amel, Paterson; Louis Amel, New York City, and Joseph Smith, Paterson. The office of the company is at 95 Harrison St.

*New York, New York Mills. Practically all the holders of the 4,000 preferred shares of the New York Mills have agreed to accept the offer made in the interest of A. D. Julliard & Company to purchase their shares at ten per cent. and have surrendered their stock to the Utica Trust & Deposit Company.

Increased Efficiency

This Combination Drinking and Cooler Fountain was designed for one of the largest industrial plants

It is so durable, sanitary and efficient that it has immediately sprung into favor in many factories where a pure **bubbling and cool** drink is desired, as during the hottest days a cool, refreshing drink is supplied that results in **better feeling** and **better work.**

Rundle Spence Manufacturing Co.
Milwaukee, Wis.

Our Automatic
Roving Can Spring

Made of fine quality spring wire adjusted to the same tension. The plate or follower is made of IXXX tin plate with rounded edges, avoiding all wear on the sides of the can. A half inch hole in the center of the plate prevents suction. The spring for satisfactory service.

Write for prices.

James Hill Mfg. Co.,
Providence, R. I.

Eureka Fire Hose

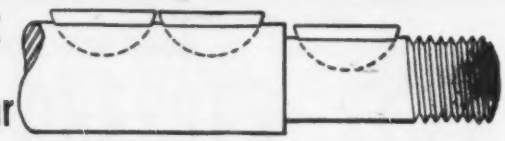
Cotton Mills, Woolen Mills, Knitting Mills and Factories need positive protection instantly available. Eureka Hose gives protection.

"Eureka" has the lasting quality and the capacity to resist wear and tear.

Fire Hose for every possible duty.

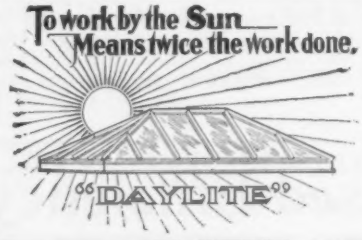
Eureka Fire Hose Mfg. Co.
NEW YORK

Key Seating Attachment
FOR
Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,
19 Oak Street, New London, Conn.



Van Noorden Skylights
ADMIT DAYLIGHT NOTHING ELSE
Applicable wherever daylight is desired.
Send for Catalogue
E. Van Noorden & Company
100 Magazine St., Boston, Mass.

FOSTER SUPERHEATERS

Installed in any type of boiler without change in setting. Uniform superheat guaranteed.

Power Specialty Company,

BOSTON: 50 Congress Street **NEW YORK: 111 Broadway.**

Important Improvement in Worsted Spinning.

THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE

saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Providence, R. I.
ALSO MFRS. OF
STEEL CAPS AND SPINDLES. **Caps, Flyers, Tubes, etc., Repaired.**

B C
TRADE MARK

BARBER-COLMAN COMPANY

MAIN OFFICE AND FACTORY
BOSTON, MASS. ROCKFORD ILL GREENVILLE S C.

HAND KNOTTERS AND WARP TYING MACHINES

Arlington Machine Works

TEXTILE FINISHING MACHINERY
ARTHUR BIRCH, Proprietor **Arlington Heights (near Boston), Mass.**

FACTS AND GOSSIP.

Pennsylvania, Pen Argyl. Some of the employes of the Pen Argyl Silk Company, silk throwsters, are out on strike.

Pennsylvania, Philadelphia. An announcement has been made to the effect that the partnership existing between Charles W. Greaves, Arthur W. Greaves and John E. Greaves, operating under the name of Greaves Bros., manufacturers of men's wear and dress goods with 108 looms at Jasper and Huntingdon Sts., have dissolved partnership, Charles W. Greaves retiring from the firm. The business will be carried on in the future by Arthur W. and John E. Greaves.

Pennsylvania, Philadelphia. The T. A. Harris Company, proprietors of the Continental Dye Works, have had conveyed to them by Susan W. Harris, the dwellings, dye house and stables on Hancock St. and Thompson St., where their present plant is located. The conveyance has been made to them for $30,000, subject to ground rents of $96. The assessed valuation of the property is $34,000.

Pennsylvania, Philadelphia. At a bankrupt sale of the plant of William R. Russell, operating the Kensington Skein Silk Dye Works, 1735 N. 6th St., its equipment was purchased by D. F. Waters for the sum of $1,500.

Pennsylvania, Philadelphia. The Royal Woolen Mills, which were started up two years ago at Kensington Ave. and Nicetown Lane, with 7 broad looms for the manufacture of chinchilla fabrics, and which has been shut down for several months, is reported as being for sale.

North Carolina, Henderson. The Henderson Cotton Mills will dispose of all their looms and operate their plant entirely on hosiery yarns, discontinuing the manufacture of brown sheetings. The spinning equipment will not be increased at present.

*North Carolina, Randleman. The Deep River Mills have not made any arrangements so far for the rebuilding of the small weave room which was destroyed by fire. The loss is estimated at $18,000, fully covered by insurance.

Ohio, Toledo. The name of the American Buckram Dyeing & Finishing Company has been changed to the American Buckram Weaving & Finishing Company.

Pennsylvania, Philadelphia. The Whitehall Textile Company, with 30 broad looms on which they will manufacture a line of cotton and worsted dress goods is the name under which the Holden's are starting up a plant in their old building at Margaret and Ditman Sts., Frankford.

Pennsylvania, Philadelphia. The Samet-Bristow Textile Company are operating a number of looms on Terry wash cloths by electric power, on E St., below Indiana Ave., selling the product direct.

Pennsylvania, Philadelphia. The M. I. Davidson Co., manufacturers of hair cloths on 80 looms at Shackamaxon and Wildey Sts., who also installed some time ago an equipment for making Turkish towels, have discontinued the manufacture of towels and will confine their operations in the future to hair cloths only.

Pennsylvania, Philadelphia. Max Davidson, operating the Standard Mills with 8 looms on bedspreads in the Lomax Mills, Jasper and Orleans Sts., has gone out of business and disposed of his equipment to Armshire & Wheeler, dealers in textile machinery at 2nd and Dauphin Sts., who report the selling of the looms to parties in McComb, Miss., who will start it up again on the same line of fabrics.

Rhode Island, Central Falls. Business is very good at present at the plant of the Abedare Weaving Company, manufacturers of cotton and silk fabrics, and there is a prospect of an overtime schedule in the near future.

Rhode Island, Glendale. Two new houses for employes have been erected by the Orrell Mills, Inc., and several more houses are planned.

DIAMOND
Roving Cans, Mill Baskets
Barrels, Boxes
Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel
Diamond State Fibre Co.
Bridgeport, Montgomery Co., Pennsylvania
Branches in Principal Cities

PICKER STICKS, SWEEP STICKS AND PICKER ARMS
• No. 1. HICKORY.
We have been supplying many of the largest Textile Manufacturing Plants with Second Growth HICKORY PICKER STICKS for twenty-five years. We are in a position to make you right prices, and to furnish you with just such quantities as you desire. Our Picker Sticks are made of the best hickory possible to obtain, and are thoroughly guaranteed. Sticks are made and fitted exactly as per sketch or sample, which should always be sent with first order.
CHARLES BOND COMP'Y
520 Arch Street, Phila.

Specify "AMERICAN" Steel Split Pulleys
Better Be Sure Than Sorry
Stocked and Sold by Dealers
THE AMERICAN PULLEY CO. Philadelphia New York Chicago Boston

WYANDOTTE TEXTILE SODA
Users Know What It Means

Mills who are using Wyandotte Textile Soda know that as a wool and cloth scourer and fuller, a soap builder, and neutralizer, as an assistant in the fixing and brightening of colors, and for preparing bleach with chloride of lime Wyandotte Textile Soda has no equal.

They will laugh at your ignorance if you suggest that "soda is soda and they are all the same." Sodas may appear as similar as salt and granulated sugar, and in their action be equally as different. Wyandotte Textile Soda is unlike any alkali you have ever used.

It thoroughly removes all grease and other matter, but does it without the least injury to the tensile strength of the fibre. The thoroughness with which it cleans, insures a wool that takes the dye evenly with no streaks or discoloration. It also imparts that soft lofty feel and appearance so much desired. On Worsted Yarn its action is equally desirable, bringing it out clear and snowy-white, not dingy or gray-white.

Then again for washing woolen and worsted clothes its superior action is easily apparent in the bright, clear colors. The fact that Wyandotte Textile Soda will not strip the colors is of great value where you are using resist dyes on Worsted Cloths, bringing their colors out bright and clear.

We would also be pleased to tell you of its beneficial action on Hosiery and Knit Goods.

Further information as to these or other uses always gladly supplied.

Order from your supply house.

This Cleaner has been awarded the highest prize wherever exhibited.

The J. B. Ford Co., Sole Mfrs., Wyandotte, Mich., U.S.A.

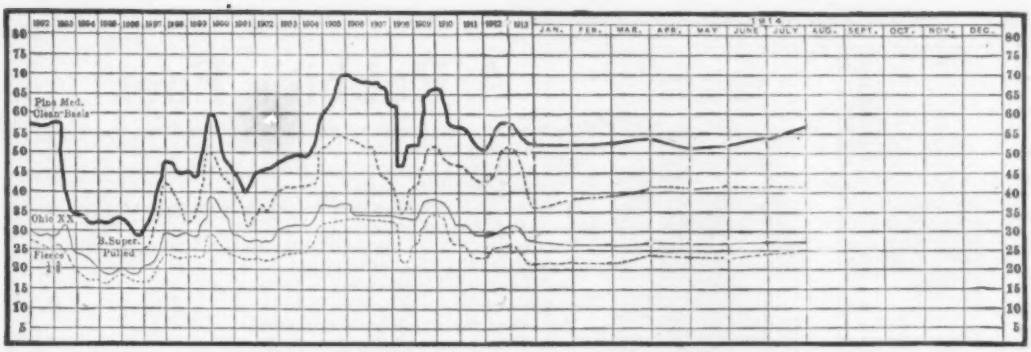


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

July was marked by activity and strength in the wool market, particularly in the finer grades of wool. Coarser wools are not in such demand. New territory wools are moving freely at firm prices. Manufacturers have been in the market getting prices on which to base their estimates for goods and recognize that the supply and demand statistics for wool offer little hope for lower prices in the near future. High grade goods have been advanced in the opening of the light weight season to cover the increased cost of raw material, but the margin of profit is so small as to require close figuring to make both ends meet, according to the manufacturers' story. The foreign situation may be affected by war complications in Europe. If the great industrial nations were drawn into a general European war it would undoubtedly have an effect upon the labor supply of Europe, which would probably affect our import trade to some extent. Business continues to be "spotty," some manufacturers having their looms very well engaged, while others report scarcity of orders. Fleece wools are less active than territories. Scoured wools are in somewhat scarce supply and pulled wools, while not active, do not accumulate.

WOOLEN.

New Mills.

*Indiana, Columbia City. Work was started July 1 on the new mill for the Columbia Woolen Mills. This is a new concern organized several weeks ago with capital stock of $95,000 to manufacture fancy cassimeres, with equipment of 24 looms. The mill will be 54 by 140 feet, with an ell, 48 by 50 feet, 2 stories high, and a power house and dyeing department, 24 by 114 feet, operated by steam power. It is hoped to have the construction completed if possible by the first of September. William Fisher is president of the new concern, and J. D. Adams is treasurer. The product will be sold direct.

Maine, Portland. The old Jutras All-Wool Knitting Company, which went out of business some time ago, has been taken over by a new company and reorganized under the name of the Wool Importing & Knitting Company. The new company is renting space at present but expects to move into a mill of their own during the coming year. At present 14 knitting machines, 5 ribbers, one winder, one dryer, three loopers and one sewing machine are operated on lumbermen's hose, a heavy wool hose, and several grades of lighter hose. A specialty is made of lumbermen's hose. It is expected to manufacture other grades at a later date. F. A. White, formerly superintendent of the Shaw Stocking Company, of Lowell, for a number of years, is associated with the new company. An office is maintained at 515 Union Mutual Bldg., Portland.

LOGWOOD BLACKS

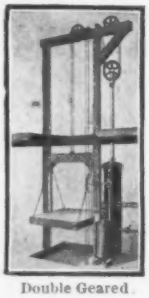
FASTNESS TO CARBONIZING

Do you know that the rich Logwood Blacks when properly dyed are fast to proper carbonizing?
The advantages of using Logwood Blacks for black and white effects need little demonstration.
We can furnish you with new and improved methods of dyeing Logwood Blacks and of carbonizing, whereby the Logwood Blacks retain their true shade and impart to fabrics the desirable Logwood Black effects.

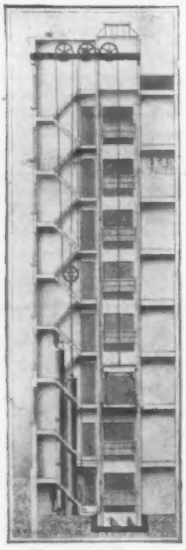
AMERICAN DYEWOOD COMPANY

NEW YORK PHILADELPHIA BOSTON HAMILTON, ONT.

Direct Acting



Double Geared



Elevator in Large Soap Factory in Jersey City

A Rabbit's Foot

Of some sort is as necessary for success in catching prosperity as for catching coons.

As I write certain great manufacturers of agricultural machinery are in financial hot water.

Awhile ago certain great manufacturers of Electrical Machinery were in financial hot water.

Yes, and awhile ago certain great manufacturers of automobiles were in financial hot water.

Not one of the Agricultural unfortunates,
Not one of the Electrical unfortunates,
Not one of the Automobile unfortunates
Had Hook'd 'er to the Biler—

But on the other hand:—

THE INTERNATIONAL HARVESTER CO. have their plants in this country and Europe equipped with Ridgway Hydraulic Elevators.

THE GENERAL ELECTRIC COMPANY are now running seven of the Ridgway Steam Hydraulic Elevators.

THE PACKARD AND CADILLAC Automobile Companies have Ridgway Steam Hydraulic Elevators.

The same kind of brains that can appreciate the Ridgway Steam Hydraulic Elevators will guide the factory to success.

Yes, Mabel, if the Boss wants a sure enough rabbit's foot he will not fail to

"Hook 'er to the Biler"

CRAIG RIDGWAY & SON CO., Coatesville, Pa.

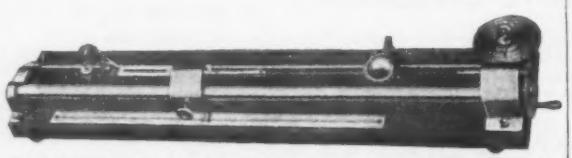
Elevator Makers to Folks Who Know

ALFRED SUTER TEXTILE ENGINEER

200 Fifth Avenue - New York

Importer of all the latest types of

Testing Instruments.
Conditioning Ovens.
Yarn Numbering Scales.
Yarn Reels.
Universal Cloth and Yarn Analyzing Set.
Combined Yarn and Cloth Strength Tester
(adapted for hand, motor drive or oil plunger)
Microscopes. Pick Counters.



New 20" Twist Tester, with take-up registering device and magnifying glass for spinning twist. Also has even tension attachment

Gambs
Micro-Thread Counter
with magnifying power of 6, 20, and 40 times

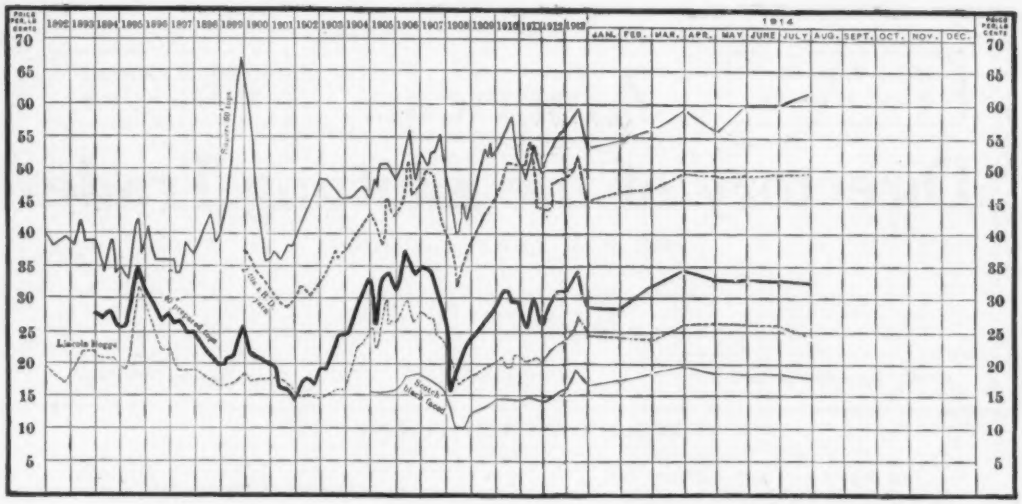


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

BRADFORD MARKET

The fact that merinos are dearer on the month does not mean that demand for merino yarns and goods has in any way improved in this market. The change is in the opposite direction and the advance that had perforce to be paid in London was wrung from spinners who have no chance of getting the extra money back. Recognizing the reality of the shortage all concerned have diverted demand to fine crossbred wherever that course has been possible and the result has been to put a premium on qualities finer than 50s.

The fall of half to one cent in prices for the lower crossbred tops occurred in anticipation of a fall in London where the raw material of this class was in large supply. The fall has done little or nothing to assist the trade in crossbred yarns and it has taken away the topmakers profit. It is still American support—or the hope of it—that keeps up the price of medium and low crossbred wool.

The purchasers of the English clip had been led to expect buying orders from America before now. In buying in the country sales they have been guided by comparisons with the prices fetched by colonial crossbred of similar quality and parcels of such wool as North hoggs have been got at rates that are looked on as favorable.

Spinners find it difficult to get delivery particulars off their old contracts and are booking as important new business. They have many frames standing, several mills are on short hours and all of them propose to make an unusually long stop at holiday time. Some makers of worsted coatings are worse off than they have ever been and all are suffering from the exhaustion of old orders and the slow arrival of new ones. Both they and makers of dress goods are avoiding stocking goods on their own account. The carded woolen trade has fallen flat and it is said in the Colne Valley that only one firm is busy and this is a firm occupied with Turkish army orders. The fine tweed trade is also slow. The American market is the only prospering one that manufacturers of fine fancy worsteds and tweeds can find at present.

WOOLEN MILL NEWS

*Maine, Sanford. The new dye house being built for the Goodall Worsted Company will be of brick construction and will take the place of the present wooden building. There will be no suspension of operations during construction work.

Massachusetts, South Royalston. It is reported that about fifty new looms have been ordered by the Royalston Mills of the American Woolen Company, and the first installment of twelve has arrived and is being set up. This new equipment replaces old machinery.

Pennsylvania, Philadelphia. A charter has been asked for the Porter Bros. Textile Company, by H. T. & I. T. Porter and Clarence R. Godfrey. The company will commence its operations in the Holden Mill, Margaret and Ditman Sts., Frankford, where they are installing 10 looms, the first of a larger equipment to follow, which they will operate on worsted men's wear and dress goods to be sold through New York. John P. Leary, formerly connected with a mill in the East, will have charge of the plant as superintendent.

1914 Edition Now Ready

American Directory of the Knitting Trade

32d Year of Publication

"THE RED COVERED BOOK"

One hundred and forty-two new mills and thousands of changes since 1913.
The edition is limited, and it is well to order now.

Handy Size for the Pocket. **PRICE $1.50** **Nearly 700 Pages**

What It Contains

Full report of every knitting mill in the United States and Canada, arranged alphabetically by states and towns, giving capitalization; names of the officers, including superintendent and buyer; kind of goods made; number of knitting machines, number of sewing machines; whether the mill dyes or bleaches or finishes; kind of power; number employed; selling agent; *kind and sizes of yarn bought.*

Special copyrighted maps of the mill districts showing the cities and towns where there are knitting mills. It is indexed so that any town may be quickly found.

Carefully classified index of manufacturers according to kind of goods made. All the manufacturers of the same kind of goods are grouped together.

Alphabetical index of manufacturers giving the page number where full report of mills may be found.

Knitting yarn manufacturers, giving classified lists of mills spinning yarns for the knitting trade.

List of dyers, bleachers, finishers, printers, etc., making a specialty of knit goods work.

Manufacturers' selling agents and commission merchants handling knit goods; the name of the person in charge of the knit goods department is given. When a concern is sole agent or special selling agent for certain mills the names of the mills sold for follow the agent's name.

New York Buyers of knit goods for out of town jobbers and large retailers, giving street addresses of buyers and names and addresses of concerns for whom they buy.

New York addresses of out of town jobbers, giving the New York address at which representatives of out of town jobbers can be reached.

List of Jobbers of knit goods, telling the kind of goods handled and the name of the buyer; very complete.

Department stores and large retailers handling knit goods.

An index of machinery and supplies used in the manufacture of knit goods, also yarn dealers supplying knitting yarns.

For the Sales Department:

The demand of the selling end of the industry for a separate book giving only the particular lists it needs in its work is supplied by

The Knit Goods Trade

PRICE $1.00

A handy 300-page book giving Classified Index of Manufacturers, Jobbers, Department Stores, Large Retailers, New York Buyers, New York Addresses of Out of Town Jobbers, and Manufacturers' Selling Agents.

Published by the

LORD & NAGLE COMPANY

Textile Publishers, 144 Congress St., Boston

New York Philadelphia Chicago

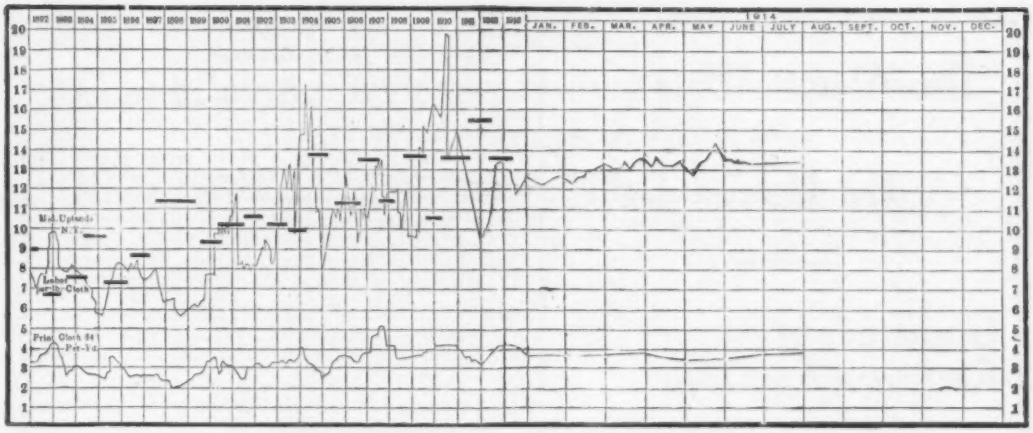


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

The cotton market is responsive to the weather news from the cotton belt. Prices have moved within a narrow range within the past month, being alternately advanced or depressed slightly according to crop news. The weather in Texas has not been as favorable as could be wished and the conditions in that State in August and early September have an important bearing on the crop. English and Continental spinners are still talking of curtailment and hoping that American spinners might join them in some concerted action, but this is not at all probable. A fair proportion of machinery is in operation and conditions in the fine goods mills show considerable improvement of late. The movement of American cotton into sight from September 1 to July 24 is reported by the Chronicle for a series of years as follows:

Year	Bales
1913-14, July 24	14,283,447
1912-13, July 26	13,417,875
1911-12, July 27	15,399,364
1910-11, July 28	11,702,980
1909-10, July 29	10,344,399
1908-09, July 30	13,473,736

The same authority estimates the world's visible supply on July 24 at 3,403,501 bales, as compared with 2,770,943 bales on the corresponding date in 1913, 2,659,325 bales in 1912, and 1,868,116 bales in 1911.

COTTON.

New Mills.

*North Carolina, Belmont. The cotton warehouse for the new National Yarn Mills has been completed and construction work is going forward on the one-story mill building, 340 by 128 feet. Thirteen thousand spindles with preparatory machinery for the manufacture of combed peeler yarns are to be installed, as noted in previous reports. The machinery contracts have not yet been awarded. A. C. Lineberger is president and R. L. Stowe is treasurer. R. C. Biberstein, Charlotte, is the architect-engineer in charge.

Pennsylvania, Philadelphia. It is reported that Joseph Margerison, formerly in the Turkish towel business in this locality, in conjunction with other parties, is about to start up a plant with an equipment of 100 looms to be operated on the same line of fabrics. The equipment is now being purchased, put in condition for operation, and being stored until suitable quarters can be secured in which to install them and start them up.

*South Carolina, Landrum. The Shamrock Damask Mills will be running on table damask during August with twenty 72-inch looms. This company was incorporated in May with capital stock of $20,000 by J. R. Mallory, formerly superintendent of the Irene Mills at Gaffney, S. C., and others. A building has been erected and the equipment is now being installed. H. L. Spears is superintendent and Mr. Mallory is treasurer and buyer. Converse, Stanton & Co., New York, will sell the product.

North Carolina, Asheville. It is reported the French Broad Mfg. Company will add 5,000 spindles to their equipment.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES

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DAYLITE
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will solve the problem of getting the most possible daylight into your mill. It's the right mill white—the mill white that stays white. Write for full information.

The Glidden Varnish Co.
Cleveland, Ohio

Factories
Cleveland, Ohio Toronto, Canada

Branch Warehouses
New York Chicago London

COTTON MILL NEWS

Enlargements and Improvements.

Alabama, Jacksonville. Some new electric drive equipment will be installed by the Profile Cotton Mills, manufacturers of cotton yarns.

Alabama, Sylacauga. It is reported that the Marble City Mills will enlarge their plant and install some new machinery. The plant now contains 5,000 spindles, making 8s to 16s hosiery yarns, operating by steam power. Benjamin Russell, of the Russell Mfg. Company, Inc., Alexander City, has been elected president, and S. P. McDonald has been elected secretary and treasurer.

Connecticut, Versailles. A warp drawing-in machine is being set up in the plant of the Totokett Mfg. Company.

*Georgia, Cedartown. The new Peerless Cotton Mills, recently organized, as noted, with capital stock of $250,000 to manufacture cotton yarns in the plant formerly occupied by the Cedartown Knitting Company, will erect an additional story to the plant and install some new spindles.

Georgia, Griffin. Five thousand additional spindles are to be added to the equipment of the Rushton Cotton Mills, replacing old equipment, and orders for this equipment have been placed. No looms will be added. Fancy dobby weaves, domets and shirtings are manufactured.

Georgia, Macon. Six thousand additional spindles will be added to the equipment of the Willingham Cotton Mills for the manufacture of heavy duck.

Georgia, West Point. Thirty-eight new cards and some roving frames are to be installed in the Lanett Cotton Mills.

Massachusetts, Chicopee. A force of men is at work tearing down the old No. 2 Mill of the Dwight Mfg. Co. An extension of the new No. 1 Mill is to be erected on the site. The work is being done by the Casper Ranger Co.

*Massachusetts, Millbury. J. J. Prindiville Co., the contractors who are erecting the addition to the Cordis Mill, have begun to tear down the old storehouse to make room for the new buildings, the erection of which is being pushed along as speedily as possible. As noted in previous reports, the capacity of the Cordis Mill is to be doubled.

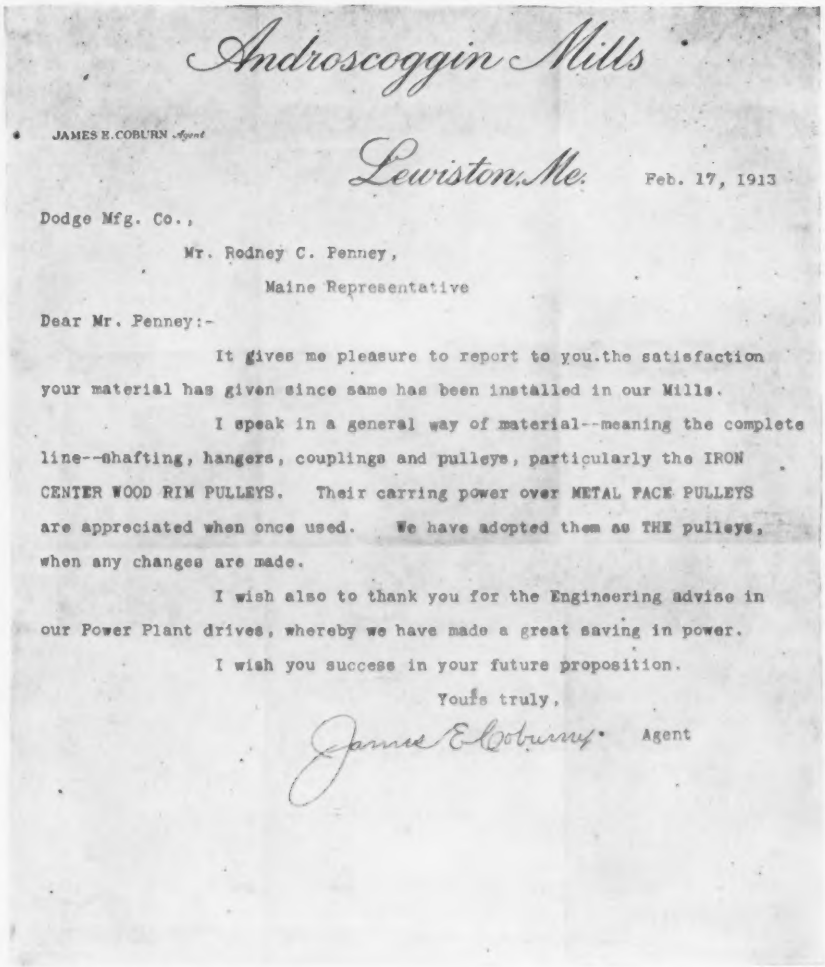
Massachusetts, North Adams. Plans have been made and work will soon be started on the erection of a new power house for the Hoosac Cotton Mills. An officer of the company is quoted as stating that the erection of the new power plant is the first step in plans to build a large million dollar addition.

North Carolina, Concord. Twenty-four new spinning frames are being installed in the plant of the Brown Mfg. Company, and will be started up in about two or three weeks.

North Carolina, Hickory. Plans have been made by the Ivey Mill Co. for extensive improvements to be made during the next month or two. A number of improvements have been made in the past month.

DODGE

Great Saving In Power Shown By Dodge Goods In Androscoggin Mills



Androscoggin Mills

JAMES E. COBURN Agent

Lewiston, Me. Feb. 17, 1913

Dodge Mfg. Co.,

Mr. Rodney C. Penney,

Maine Representative

Dear Mr. Penney:-

It gives me pleasure to report to you the satisfaction your material has given since same has been installed in our Mills.

I speak in a general way of material--meaning the complete line--shafting, hangers, couplings and pulleys, particularly the IRON CENTER WOOD RIM PULLEYS. Their carring power over METAL FACE PULLEYS are appreciated when once used. We have adopted them as THE pulleys, when any changes are made.

I wish also to thank you for the Engineering advise in our Power Plant drives, whereby we have made a great saving in power.

I wish you success in your future proposition.

Yours truly,

James E. Coburn Agent

Estimates on Complete Transmission Equipments for Textile Mills Cheerfully Furnished Free of Obligation

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Dyers, Bleachers, Gassers

Dyers of Colors Fast to

SUN AND BLEACHING

Aberfoyle Manufacturing Company

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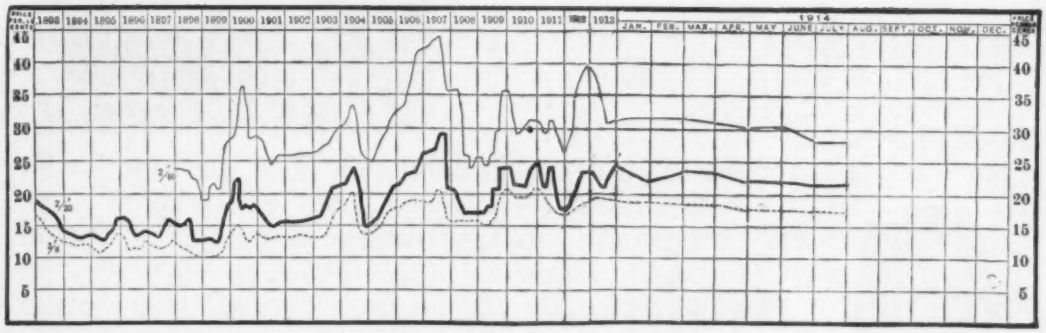
Philadelphia

746 Insurance Exchange
Chicago

Yarn Department



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

There has been no improvement in the cotton yarn situation during the past month and reports from various sources would seem to indicate very little improvement for August. Weavers and knitters alike have about the same proportion of machinery in operation and unsettled conditions throughout the whole country prevails and, as some of the manufacturers put it, "big business is up a tree" as to what to do or how to do it. In the Philadelphia market weaving yarns have been practically at a stand still with purchasers mostly for spot delivery and in small lots. One or two exceptions have been reported, however, within the past few days. One purchaser of lace curtain yarns attracted attention by asking for some yarns which are reported as having been carried in stock by the dealer for some time before he received the inquiry from the party who bought the stock. Another lot, 5,000 lbs. of 1/20 warps, is reported as having been sold at 20 1/2 cents. In both cases the prices paid by the manufacturers were less than what the spinners of these yarns would consider. Offers of 24 1/2 cents for 2/30 have created very little interest among buyers of this number and this is rather strange when there seems to be but a fair stock of yarns in the Philadelphia warehouses and hardly if any yarns arriving on the steamship lines. In the carpet trade 2/16s are selling at 20 cents for white stock and 19 1/2 cents for tinged stock. 8/3 tubes 18 to 18 1/2 cents and 8/3 skeins 17 1/2 to 18 cents. 2/20 warps at 22 to 22 1/2 cents while 2/30 have been offered at 24 1/2 to 26 cents and 1/14 warps have been sold at 20 1/2 cents for white and 19 1/2 cents for tinged yarns and 2/40 warps have been sold for 29 to 30 1/2 cents.

Eastern Cops

6s	19¼
8s	19¼
10s	21¼
14s	22¼
16s	23½
18s	23¾
20s	24¼
22s	24¾
24s	25¼
26s	25¾
30s	26¾
34s	29
36s	30
40s	29½

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	23
14s	23½
18s	24½
20s	25
24s	26½
26s	27½
30s	28½
36s	36
40s	38
45s	42
50s	45
55s	46½
60s	51½

Eastern Two-Ply Warps, Carded Peeler

2/30s	29
2/36s	36
2/40s	38
2/45s	42

A garment made with our *Spun Silk Machine Twist* gives your salesmen a good talking point.

You can improve that part of the garment which is subjected to the greatest wear by using our Spun Silk Machine Twist made especially for Sweater Coat buttonholes. The difference in the yardage over the same size in cotton will offset the difference in the cost.

All staple colors can be furnished at short notice. Many manufacturers are finding it is economy to have us figure on their special requirements.

Nonotuck Silk Company

Established 1838
SPUN SILK YARNS
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MANUFACTURERS OF
Novelty Yarns — Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.
Cotton Warps — on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.
Mercerized Cotton Yarns — Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

MONUMENT MILLS, HOUSATONIC, MASS.
HIGH GRADE COTTON YARNS White, Colors, Bleached
On Beams, Jack-Spools, Cones, Skeins and Chain Warps
FAST-BLACKS & COLORS | For Woolen Mills a Specialty | WE SELL DIRECT

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HIGHEST GRADE
BEST VALUE
Mills
RAINBOW, CONN.

JACQUARD CARDS
THE MERWIN PAPER CO

SPECIALTIES
FOR ALL PURPOSES
Inquiries Solicited
Address
HARTFORD, CONN.

2/50s	45
2/60s	53

THE PHILADELPHIA MARKET

7s and coarser	20½
8s and 9s	20½
10s	20½-21
12s	21-21½
14s	22
16s	22½
18s	23
20s	23½
22s	24
24s	24½
26s	25
30s	26
40s	32
50s	38

Southern high grade mule yarns:—

Cones

10s	23
12s	23½
14s	24
16s	24½
18s	25
20s and 22s	25½-26
24s	26½

Southern frame yarn, lower grades:—

6s and 8s	19½
10s	20

Eastern cones (high grade quality):—

10s	23½
12s	24
14s	24½
16s	25¼
18s	25¾
20s and 22s	26¼-26¾

Skein yarn (mostly Southern):—

4s and 8s soft	19-19½
10s and 12s	20-20½
14s and 20s	21-22½
22s	23
10/2	20
16/2	21
20/2	22½
30/2	25½
40/2	30
8/2	20
7/6	20

Southern warps:—

10/1	20
14/1	21
16/1	21½
20/1	22
22/1	22½
26/1	23½
30/1	25½
8/2	21
12/2	21
14/2	21½
16/2	21½
20/2	22-22½
26/2	24

"WHY NOT TRY LAMBETH NEXT TIME"

JOHN F. STREET & CO.

Cotton Yarns

PROVIDENCE, R. I.

Providence, Chicago, Philadelphia, New York

Fred Sternberg & Co.

530 BROADWAY, NEW YORK

MERCERIZED, GLAZED, GASSED } COTTON YARNS

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Manufacturers of

Twines, Threads and Yarns

Jacquard Harness Twines of all kinds on hand and made to order

S. W. Cor. Fifth and Market Sts., Phila.

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COMMISSION MERCHANTS

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Students Cotton Spinning

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Price $3.00. Express prepaid

FOR Student and Manufacturer. Covers all operations from ginning through ring and mule spinning.

600 pages, 600 illustrations, drafts, plans, etc.

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Bleaching, Fulling and Scouring

Red Oil and Olive Oil Crown Soaps

J. O. Draper Co. Est. 1860 Pawtucket, R. I.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

FITCHBURG, MASS.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cotton, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING COMPANY

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COTTON YARNS

CARDED and COMBED in Nos. 10 to 120, from PEELER EGYPTIAN and SEA ISLAND COTTONS
MERCERIZED YARNS, IN SINGLE OR PLY, A SPECIALTY

Industrial Tape Mills Co.

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Manufacturers of

NARROW FABRICS

SPOOL TAPES. STAY BINDINGS AND BRAIDS

Also Sole Manufacturers of

SAXON

New Guaranteed Non-Shrinkable Tape

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers

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2124 to 2130 E. York St., PHILADELPHIA, PA.

Knitting and Weaving YARNS

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment

EDWARD S. HYDE

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Linen Weaving and Knitting Yarns

Linen Jacquard Harness Twines

And Linen Yarns and Threads for every purpose

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LINEN THREADS OF EVERY DESCRIPTION

T. J. PORTER & SONS Large Stocks
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TO NEW AND LARGER QUARTERS AT

432 FOURTH AVE. Corner of 29th St.

30/2	25½
40/2	30
50/2	38

LINEN YARN MARKET

As far as dry spun tow yarns are concerned, these yarns being used for the toweling and similar trades, prices are very steady, but no dearer. However the crop conditions will if anything tend to harden prices all along the line. General conditions in Belfast are a little below normal among the spinning trade, with enough business passing to keep them active. Fine yarns in the American markets have shown a hardening in price on all counts, as good grades of flax for fine spinning are not at all easily secured for spinning purposes. The usual amount of American business is being taken, but most of the buyers are booked under contracts for several months ahead.

("A" Quality)

35s Lea on cones	83
50s Lea on cones	88
60s Lea on cones	93
80s Lea on cones	98
90s Lea on cones	1.07
100s Lea on cones	1.10
110s Lea on cones	1.25
120s Lea on cones	1.45

*Massachusetts, Salem. Preliminary work has been started toward the rebuilding of the Naumkeag Steam Cotton Mills on the old site, and plans are now being prepared for a larger and better plant, of concrete construction. The weave shed will be a separate building and two buildings will probably be occupied by the yarn and preparatory departments, making three manufacturing buildings besides the storehouse which was not burned. William W. McMullan, agent and manager, is in full charge of rebuilding and hopes to have one mill in operation by September 1 and other mills completed and running soon after that date. Parker, Wilder & Company, selling agents, have sent out a notice to the effect that within eight to ten weeks looms will be running on several of the most popular widths of wide sheetings.

*North Carolina, Mayesworth. The addition to the plant of the Mayes Mfg. Company will be three stories high, and will be used for winding, finishing and packing machinery, which will be moved from the present building. Between 4,000 and 5,000 spindles, about 1,500 twister spindles and some spoolers and warpers will be installed in the space left vacant by the removal of the old machinery.

Pennsylvania, Philadelphia. A new boiler is being installed in the plant of Stead & Miller Company, manufacturers of tapestries and upholstery goods. The plant is shut down for two weeks to facilitate this installation of a boiler and to take an inventory.

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RAMIE YARNS
In all numbers for
Knitting, Weaving and Laces
Manufacturers
Erste Deutsche Ramie Gesellschaft
Emmendingen, Germany
Sole Agents
PFALTZ & BAUER, Inc.
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300 PEARL STREET
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GOLD STAMPS
SKETCHES AND SAMPLES ON REQUEST
MEYERCORD CO. PHILADELPHIA & CHICAGO.

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Card Stamping and Repeating
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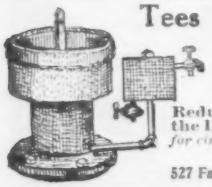
"Marathon"
Oak Tanned Belting
Worsted Aprons

R. H. HOOD COMPANY
1842 Germantown Ave., Philadelphia, Pa.



Tees Dash Pot Governors

For the relief and perfect regulations of the Dash Pots of Greene & Corliss Engines and Ice Machines.
Runs Automatically, load on or off. Reduces Friction and Noise, Lightens the Lifts and makes quick drops. *Send for circulars.* 30 days trial allowed.
MARCELLUS & TEES
527 Fairmount Ave. Est. 1899 Philadelphia, Pa.

Established 1796

Special shaped carbon, black diamond, pointed tools for turning paper, rag, corn husk and cotton calender rolls, hard rubber, fibre, etc. Manufactured by
Thos. L. Dickinson, Successor to John Dickinson, 64 Nassau St. New York City

Established 1844.

BENJ. BUCKLEY'S SON,
(WM. J. BUCKLEY) *Gun Mill, Patterson, N. J.*
Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.
Roving Spindles and Flyers a Specialty. Light Forgings.
REPAIRING OF ALL KINDS.

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FOR PRINT WORKS GINGHAM AND COTTON MILLS BLEACHERIES' ETC., ETC'
Send for circular.
Manufactured by
ELLIOTT & HALL, 54½ Hermon St., Worcester, Mass.

Silk Throwing and Waste Silk Spinning — *Raymer*
Deals with the preparation of yarn from the raw silk: also waste silk spinning and the utilization of waste products. For silk manufacturers or workers, or for men who use silk in connection with cotton, worsted or wool. 158 pages; 117 illustrations; cloth. Price, $2.50 Prepaid.
Catalog of Textile Books sent free.
LORD & NAGLE CO., Textile Publishers
144 Congress Street. - - - Boston, Mass.

COTTON MILL NEWS

South Carolina, Columbia. The Olympia Mills of the Hampton Cotton Mills Company are now being operated by electric power furnished by the hydro-electric plant at Parr Shoals. These mills have been run for some time by electric power generated in their own plant. The Capital City Mills and the Granby Mills of the Hampton Cotton Mills Company will also be operated by power from Parr Shoals.

South Carolina, Whitmire. New machinery, including 50 automatic looms and about 5,000 spindles, is arriving at the plant of the Glenn-Lowry Mfg. Company.

Tennessee, Englewood. The Eureka Cotton Mills will discontinue the manufacture of cotton yarns, wrapping twines and similar goods, and make knitting yarns for the manufacture of men's union suits. Fifty hands are employed in the new department. It is expected to begin the production about August 15. The plant is operated by steam power and the product is sold direct. M. E. Brient is president and buyer; J. L. Ferguson is treasurer; and R. S. Remer, superintendent.

Virginia, Danville. The Riverside & Dan River Cotton Mills have ordered 150 new spinning frames for No. 4 and No. 1 Mills, replacing old equipment.

Virginia, Lynchburg. Some new equipment including 10,000 spindles with preparatory machinery, has been installed in the plant of the Lynchburg Cotton Mill Company, manufacturers of sheetings and osnaburgs.

.....

Mills Starting Up.

Mississippi, Moorhead. The old plant of the Bellevue Mills Co. is to be taken over by a new concern recently organized under the name of the Mississippi Cotton Mills Co., with capital stock of $250,000, and the plant will be started up soon. The officers are Walter H. Carter, president; Peter H. Corr, vice-president; Sheridan E. Cooper, 208 Security Bldg., St. Louis, secretary and treasurer. Walter H. Carter, president of the company, is a brother of C. B. Carter of Philadelphia, secretary of the National Association of Hosiery and Underwear Manufacturers. We reported the incorporation of the new company, under the laws of Delaware, earlier in the month and noted at that time that C. B. Carter was one of the incorporators.

*New York, Gouverneur. The International Lace Company, whose plant was shut down for a short time, as noted, has resumed manufacturing, operating all departments on full time.

F. C. BARTON
65 Worth Street, New York
MANUFACTURERS OF
"LILY" BRAND NARROW FABRICS
WEB, TAPE, BINDINGS, ETC.

THE BIAS NARROW FABRIC CO.
F. C. BARTON, President
65 Worth Street, New York
Bias and Straight Cut Fabrics and Ribbons.
Embossing and Cutting Customers Own Goods a Specialty.

FACTS AND GOSSIP.

Massachusetts, East Braintree. It is expected the East Braintree Bleachery & Dye Works will begin operations in about four weeks. The bleach house, starch house, and drying room are now completed.

*Massachusetts. Fall River. The plant of the Fawcett Silk Company. 189 Stafford Road, which was recently damaged by fire, is closed.

Massachusetts, Fall River. The reorganization of James Marshall & Bro., which has been in process for some time, has been perfected, and a charter has been secured under the style of Marshalls, Inc., with capital stock of $700,000.

Massachusetts, Globe Village. Dividends have been resumed by the Hamilton Woolen Co. At a meeting of the directors a dividend of 3 per cent. was declared payable August first.

*Massachusetts. Lawrence. The razing of the Atlantic Mills property, recently seized by the city from the Pacific Mills, is progressing rapidly and it is expected to have work completed within 45 days to allow work on the bridge foundation to begin.

*Massachusetts. Ludlow. Manufacturing has been resumed at the two mills of the Ludlow Mfg. Associates, which were closed for two weeks.

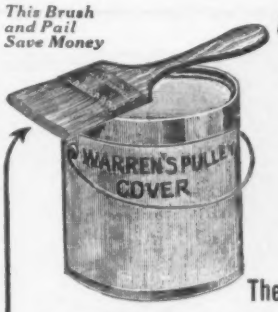
Massachusetts, New Bedford. An increase of 10 per cent. has been granted the weavers of the Neild Mfg. Corp., who went on strike this week. Operations have been resumed.

Massachusetts, New Bedford. The strike at the Wamsutta Mills has been settled and the weavers have returned to work. An increase in wages has been granted by the company.

Massachusetts, North Adams. All the mills here are running full time to fill orders and some mills are running overtime. Conditions are better in North Adams now than they have been for several months.

*Massachusetts, North Brookfield. Herbert C. Keith, secretary of the Oxford Shareholders' Committee, 116 Nassau St., New York, advises that the Phoenix Linen Company has been organized under the laws of Maine with capital stock of $1,400,000 by the Oxford Shareholders' Committee and will succeed the bankrupt Oxford Linen Mills. The capital is classified as $400,000 preferred stock, par value $1 a share, and $1,000,000 common stock, par value $2.50 a share. It is not known definitely when the mill will be in operation again but every effort is being made to start up the plant within a short time. Representatives of the Oxford Shareholders' Committee have been over the plant and are securing the return of old operatives to North Brookfield.

This Brush and Pail Save Money



Speed-Up Production

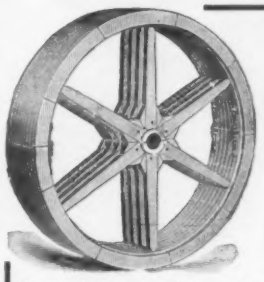
with Warren's Pulley Covering compound. It's a big economizer. Because:

It Will { Save Fuel, Belts, Power }

If you want to increase Belt Efficiency in your mill send this ad or write to

The Warren Co., Mfrs.

Removed from Chicago to: Chicago Road, NILES, Mich.



Gilbert Wood Split Pulleys

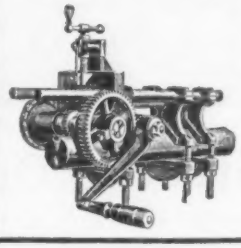
SAGINAW Manufacturing Company

Saginaw, Mich., U. S. A.

New York Branch, 88 Warren Street
Chicago Branch, 105-109 North Canal Street
Sales Agencies in all the Principal Cities
Cable Address: Engrave A B C and Lieber's Code

YOUR REPAIR SHOP
is not complete unless equipped with one of these

BURR KEYSEATERS



They cut perfect keyseats in shafting anywhere. Save time, delays and money. No. 1 keyseats shafts to 5 in. diameter. Price with full set of cutters, $40.00 net. No. 2 takes shafts to 8 ins. Price, with cutters, $75.00 net.

Interesting booklet free.

John T. Burr & Son
440 Kent Avenue
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RICHARDS, ATKINSON & HASERICK

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TEXTILE MACHINERY
MILL SUPPLIES
EGYPTIAN COTTON

PHILADELPHIA OFFICE "THE ARCADE"

SPECIALTIES
"Solvene"
"Diastase"

JAFFRAY MFG. CO.

Manufacturers of
Textile Chemical Specialties

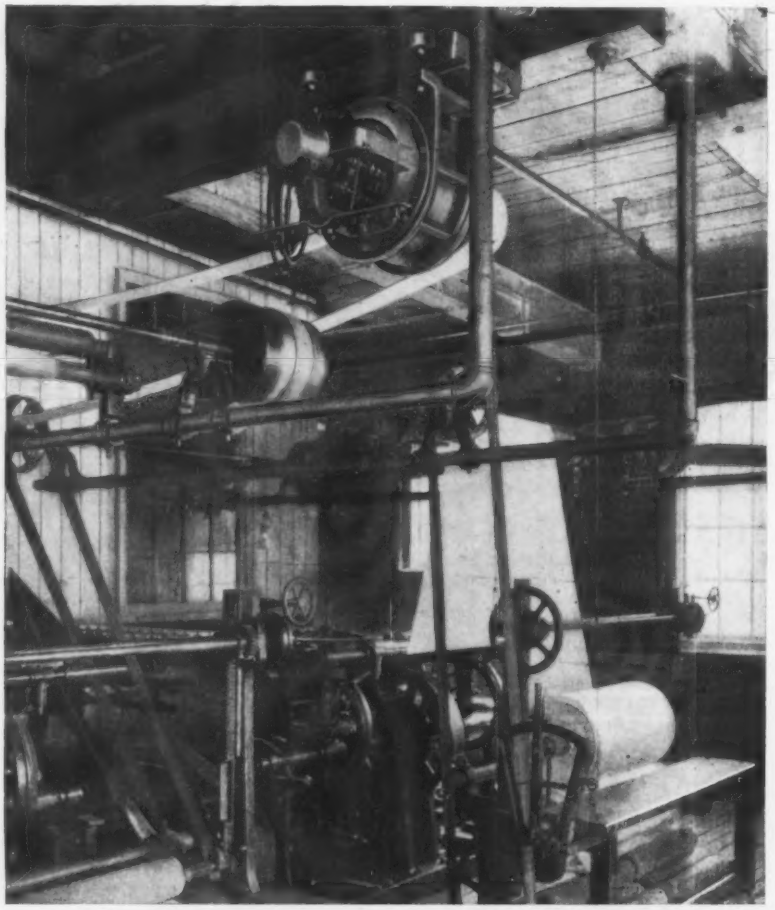
OFFICE AND WORKS:
18 Dunham Place, Brooklyn, N. Y.

Sizing Compounds for Cotton and Woolen Warps
Starches
Dextrines
British Gums

Sole Agent: VICTOR G. BLOEDE CO., Baltimore, Md., for Soluble and Turkey Red Oils.
A trial order will convince both as to price and quality.

The Guarantee of Excellence

On Goods Electrical



The Guarantee of Excellence

On Goods Electrical

G-E Motor Driving Tenter Frame, Windsor Print Works, North Adams, Mass.

Satisfactory Operation Sells Nine

THE satisfactory performance of the electrical equipment shown above sold six to the same mill and three to a neighboring mill. ¶ Any degree of speed change desired can be obtained with this G-E motor drive as there are no set speeds or "steps." ¶ Replace mechanical speed changing devices and isolated low efficiency steam engines with their long steam condensing pipes by this highly economical motor drive.

YOUR INQUIRY IS SOLICITED

General Electric Company

Largest Electrical Manufacturers in the World

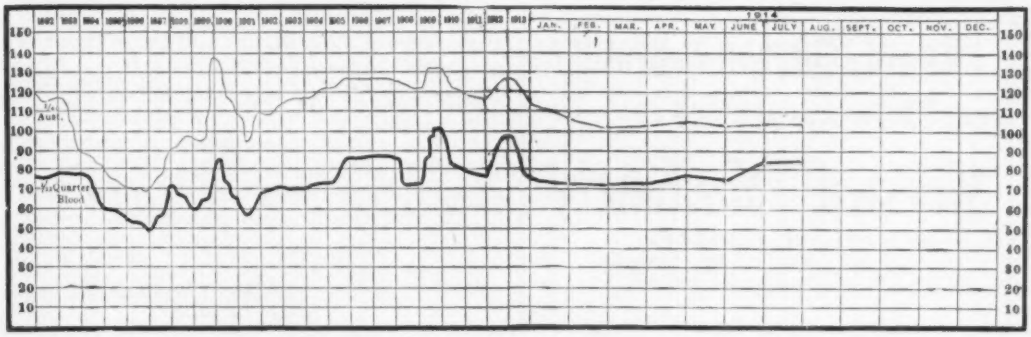
Sales Offices in all Large Cities

General Office: Schenectady, N. Y. **District Offices in**

Boston, Mass. New York, N.Y. Philadelphia, Pa. Atlanta, Ga.
Cincinnati, O. Chicago, Ill. Denver, Colo. San Francisco, Cal.

MOTOR AGENCIES IN ALL LARGE CITIES AND TOWNS

5115



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

THE WOOLEN AND WORSTED YARN MARKETS

Spinners of weaving yarns report that they are waiting for the light weight season to get well under way. Some of them have booked a fair amount of business for 2/40s half blood yarns at 97 1/2 cents, this being the average prices paid by the weavers, with the majority of the business being reported as coming from Eastern mills. A number of spinners are fairly busy on these yarns and the trade in general is looking forward to a good business and are fairly well pleased with conditions.

On knitting yarns it is said that the spinner is receiving only a fair amount of orders, although it is believed that after the 1st of August there will be more activity shown, as the buyers at this time will come into the markets for goods, which will make it necessary for the knitter to buy yarns in order to get out his orders. There seems to be some little stimulus to inquiries at this time, in fact more so than for a few months past, and these inquiries are covering practically the entire range of yarns used in the knitting trade. It is also said that an early fall will no doubt catch a good many of the jobbers short of goods and make it necessary for him to place rush orders which in itself would reflect upon the yarn market and secure some good business for the spinner.

Spinners express the opinion that prices will hold steady and firm for the reason that the wool sales in London closed very strong and there seems to be an indication from all points that prices under existing conditions will not, or rather cannot, drop for some time to come. The scarcity of wool and the number of buyers in the market for that which is in sight being responsible for the upholding of prices, market conditions being such that it would be next to impossible for spinners to sell their yarns for less money than present quotations for the simple reason that almost all of them are practicaly selling their goods at cost. Of course this has been brought about to a greater or lesser extent by foreign competition and the prices offered by foreign spinners, but many of the weavers and knitters have expressed the opinion that after purchasing some of the yarns from foreign houses and putting it into their fabrics they have come to the conclusion that it is wiser for them to buy domestic yarns even though they have to pay five or ten cents more per pound.

BRADFORD SPUN YARN

2/12 to 2/16 low common	60-62½
2/20 to 2/24 low 1/4	62½-65
2/20 to 2/25 1/25 1/4 blood	67½-70
2/26 to 2/28 1/4 blood	72½-75
2/32 1/4 blood	75-77½
2/20 3/8 blood	77½-80
2/26 3/8 blood	82-84
2/32 3/8 blood	84-86
2/36 3/8 blood	85-87½
2/40 1/2 blood	95-97½
2/40 delaine	99-102½
2/50 delaine	1.05-1.07½
2/40 Australian	1.02½-1.05
2/50 Australian	1.12½
2/60 Australian	1.17½-1.20
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	77½-80
2 and 3 ply 10s-15s straight 1/4 blood	80-82½
2 and 3 ply 16s-20s straight 1/4 blood	80-82½
2 and 3 ply 20s-24s straight 1/4 blood	82½-85
2 and 3 ply 24s-28s straight 1/4 blood	85-87½

(Reduce 7½c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	74-76
1/20 high 1/4	77-80
1/20 3/8	80-82½
1/20 high 3/8	82½-85
1/20 1/2 blood	85-87½

Edward Jefferson & Brother
SPECIALISTS IN
Worsted Machinery
117-123 South 2d Street
PHILADELPHIA, PENNA.

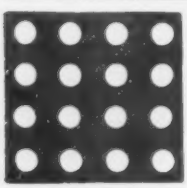
MACHINERY ERECTED
For Spinners of Cotton, Woolen, Worsted, Silk and Flax
Making a Specialty of Worsted Machinery
Carding, Combing, Drawing, Spinning, Twisting, Finishing, Lining, Leveling, Dismantling, Packing, Shipping
Work Done Anywhere. *All Work Guaranteed*
MICHAEL KERWIN, 439 North 53rd St., Philadelphia, Pa.

William Whitman Co.
COMMISSION MERCHANTS
COTTON and WORSTED YARNS
BOSTON NEW YORK PHILA. CHICAGO CHARLOTTE

JAMES LEES & SONS CO.
MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
Mills and Office: Bridgeport, Montgomery Co., Pa.

J. B. Jamieson
77 Summer St., Boston
Imported Worsted Yarns
For Knit Goods, Men's Wear and Dress Goods

HAROLD R. SHIRLEY
242 Chestnut St., Philadelphia, Pa.
French Spun Worsted and Merino Yarns
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING


Perforated Plates for Wool Washing
Rinsing and Carbonizing
In Special Metal
BECKLEY PERFORATING CO.,
Garwood, N. J.

1/30 1/2 blood	87½-90
1/40 1/2 blood	92½-95
1/50 delaine	1.00-1.02½
1/40 Australian	95-97½
1/50 Australian	1.02½-1.05
1/60 Australian	1.10-1.12½
1/70 Australian	1.17½-1.20

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

—÷—

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	69
1/30 50/50 White Merino Cop	71
1/40 50/50 White Merino Cop	73
1/20 60/40 White Merino Cop	73
1/30 60/40 White Merino Cop	75
1/40 60/40 White Merino Cop	77
1/20 70/30 White Merino Cop	78
1/30 70/30 White Merino Cop	80
1/40 70/30 White Merino Cop	82
1/20 80/20 White Merino Cop	82
1/30 80/20 White Merino Cop	84
1/40 80/20 White Merino Cop	86
Sliver and Sanitary Mixes	3c. more
Coning on 1/20	2c. more
Coning on 1/30	3c. more
Coning on 1/40	4c. more

—÷—

WOOLEN AND MERINO YARNS

Spinners of woolen and merino yarns, especially those making yarns for the knitting trade, report business as being very quiet. It is expected, however, that after the season opens up for goods into which these yarns are put, woolen yarns will move somewhat better, although in many instances they report that the least said about the condition of their business the better for all hands. It might be said, however, that some little business is being placed, but not what should be at this time, as most of the knitters are using worsted yarns instead of woolens for their goods. Prices remain the same as in our previous report.

WOOLEN AND MERINO YARNS

2/20 Light Grey Mixed	80%	20%	52-55
2/20 Light Grey Mixed	90%	10%	57½-60
2/20 Light Grey All Wool			62½
2/20 Colored All Wool			60-62½
2/20 Bleached	80%	20%	65
2/20 Bleached	90%	10%	67½
2/20 Bleached All Wool			72½
2/23 Colored All Wool			62½-65
2/23 Bleached 90/10			67½-70
2/23 Bleached All Wool			72½-75
2/25 Light Grey Mixed All Wool			80-82½
2/25 Bleached All Wool			85-87½

THE RAG AND SHODDY MARKET

The trade in rags and shoddies continues quiet. This is due to the fact that many of the mills are running only part time or are shut down entirely. There is a small demand for low grade wool and card waste, also medium grades of white as well as colored worsted garnetted waste. Cotton linters are in light demand and prices remain firm. Cotton waste is very quiet, the mills taking only small amounts even on old contracts. While the market for new clips is rather quiet there is a fair demand for fine light and fine dark clips. We quote as follows:

SHODDIES AND EXTRACTS

White yarn, best all wool	46-49
White knit, all wool, best fine	30-30
White, knit, No. 2	23-30
Light yarn, extra fine	35-36
New pure indigo blue	24-27

Merino

Fine light, all wool	20-22
Medium light, all wool	19
Fine black, all wool	17-19
Fine dark, all wool, best grade	18-20
Medium dark, all wool, No. 2	13-15
Red knit stock, strictly all wool	20-24
Red flannel, all wool	19-22
Dark Blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	12-14

NEW WOOLEN RAGS

Fine merchant tailors	5½-7½
Choice light colors	7-8
Browns	11½
Blacks	6
Blues	8½
Fine dark	7-12
Medium dark	4-5

Serges

Black	9½
Blue	10-11

Flannels

Very light	17-18
Mixed	10-11
Black	6-7½

SOFTS AND KNIT STOCK

Soft woolens, best	5-6
Old white flannels	11-14
Old red flannels	10-11
Old blue flannels	3-5½
Old plaids	3
White stockings	20-24½
Clear dark hoods	7-8
Light hood stock	13-14

Massachusets, Millbury. Thirteen looms, formerly in the Ramshorn Mill at West Millbury, have been purchased by the Mayo Woolen Co. and are being installed, replacing older looms.

Interruption of Production

is recognized by textile mill operators as the most costly element of repairs.

Allis-Chalmers TEXTILE MOTORS

are so liberally designed and so sturdily constructed that they will operate for years without need of repairs providing they are properly supplied with oil while in service.

"Motors for all drives"

Allis-Chalmers Manufacturing Company

Power and Electrical Equipments

Milwaukee - Wisconsin

For all Canadian business refer to Canadian Allis-Chalmers, Limited, Toronto, Ont.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills

EATON RAPIDS, MICHIGAN

OTTO KUNZE

2542 Seventh Avenue, New York City

Our Specialty: Fibre Covered Shuttles Of Every Description

Samples sent on application

Carpet Manufacture.

By FRED BRADBURY.

The only complete work on the subject.

A handsome volume, bound in dark green cloth, gold lettering; over 300 pages; 256 illustrations and 3 colored plates.

Price $3.00, Carriage Prepaid

A reliable book on carpet and rug manufacture that will strongly appeal to the manufacturer and designer. It is written in an easy style, combining text and illustrations in a manner that gives the perfect technical book.

The chapters are: Designing, Color, Brussels Carpets, Wilton Carpets, Tapestry Carpets, Axminister Carpets, Chenille Axminister Carpets, Kidderminster and Scotch or Ingrain Carpets.

LORD & NAGLE CO., Publishers, Boston, Mass.

Cheney Silk Yarns

for Woolen and Worsted Goods

MANUFACTURERS of silk-mixture goods buy Cheney Silk Yarns with confidence. They know from experience that particular care is taken in the production of Cheney Silk Yarns. They know, too, that the firm of Cheney Brothers has proved its reliability through years of catering to this particular trade. Cheney Silk Yarns are *good* yarns and are admirably adapted for securing good results. These yarns can be supplied in any form desired—on your own loom beams or jack spools; cones, spools or bobbins; also in ball warps. Quotations and samples on request.

CHENEY SILKS

CHENEY BROTHERS

Silk Manufacturers

4th Avenue and 18th Street, New York

National Silk Dyeing Co.

Main Office, PATERSON, NEW JERSEY, 140 Market Street

NEW YORK SALESROOM, 60 UNIVERSITY PLACE

Skein Silk Dyeing of every description for every class of textile manufacture.

Hosiery Dye—Boil-off, weighting and dyeing, treated especially to meet the requirements of the hosiery and knitting trade.

Piece Dyeing and Finishing—All silk and silk mixed goods.

Printing—Surface and warp printing.

WORKS:

Paterson, N. J. Dundee Lake, N. J. Allentown, Pa. Williamsport, Pa.

THE SILK MARKET

The silk market is still firm and inactive. It is not known when prices will advance, but as the manufacturers' stocks are in many cases depleted and buying confined to small lots at the present time, it is predicted that when the mills are again running full on fall and spring business manufacturers in the silk industry will face an advance in prices.

There is very little silk in the market, Yokohama reporting but five thousand bales at this time, so that there seems to be an even chance that prices will be maintained and possibly advanced in the near future. At the present writing there are conditions existing in Europe which may involve many of the countries in war. If this should occur, the silk industry would feel its effect most decidedly.

Shanghai reports a weak market with little silk in sight and higher prices for tussahs, while Canton remains fairly steady and the raw product at a premium, owing to the lateness of the fourth crop. In Milan the market is also reported firm with little or no activity. It is reported that the past week has seen much buying of raw silk by the European manufacturers. This fact alone will account for some of the shortage that is felt in the market.

The silk manufacturers in this country are quite busy in many lines; especially is this true in the broad silk line, and all predict a good season. It is also to the satisfaction of the broad silk manufacturers that the fall styles will require an increase in yardage, thus increasing the net production of many of the mills. The broad ribbon manufacturers are still enjoying a good business, with bright prospects for fall and spring. This is not true of the narrow ribbon manufacturers, however, as the use of this product has been curtailed to a considerable extent by the prevailing styles.

The cotton and knitting manufacturers are not buying much raw silk, but it is predicted that owing to their much depleted stocks, it will not be long before they will be active buyers. The dry goods districts show some improvement in the call for the finished product. Retail stores report a fair business for the past month in broad silks, while broad ribbons of the Roman stripe type, also satins and brocade, are having a great run, being used to a large extent as girdles. It is predicted that this style will last until late in the season. Crepe de chene, poplins and wool back satins, yarn dyed and piece dyed, are destined to remain popular for fall and spring. All signs point to a continued call for black velvet ribbons and it is predicted that an unusual sale of this product will ensue this fall. Manufactures in the silk industry are quite optimistic as to the future, and, unless all signs fail, they expect the next

VILLA, STEARNS COMPANY
Telephone, 6174 Gramercy
American Woolen Building
221 Fourth Avenue, New York
RAW AND THROWN SILK
Silk on Spools, Cones, Quills, Beams
DYED SILK FOR ALL PURPOSES
Philadelphia Office:
519 Bourse Building
Providence Office:
Howard Building

KROUT & FITE MANUFACTURING CO.,
MANUFACTURERS OF
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY
TELEPHONE CONNECTION
OFFICE AND MILL ALLEGHENY AVE. AND EMERALD ST., PHILADELPHIA

Spun Silk Yarns

For All Purposes

SILK NOILS

Champlain Silk Mills

500 Driggs Avenue

Brooklyn, N. Y.

OFFICES:
New York, 38 East 25th St.
Prov., R. I., Industrial Trust Bldg.

MILLS:
Brooklyn, N. Y.
Whitehall, N. Y.

SAUQUOIT SILK MFG. CO.

INSULATING AND BRAIDING SILKS

ORGANZINE, TRAM AND HOSIERY SILKS

Fast Dye Organzines for Woolen Manufacturers a Specialty

Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa.
New York Representative, Wm. Ryle & Co., 225 Fourth Ave.
Philadelphia Office, 4015 Clarissa St., Nicetown
Chicago Office, 206 So. Market St.
Boston Office, 78 Chauncey St.

SILK CITY WARPING CO.

No. 167 Ward Street, Paterson, N. J.
ADDRESS ALL CORRESPONDENCE TO NEW YORK OFFICE,
CARE E. GERLI & CO., 119 E. 27th STREET
All Frames Equipped with Latest Improvements, Particularly
W. & R. Oscillating Reed Motion,
The Latter Assuring Complete Relief to Strain on Silk
GOODS FULLY INSURED BY FIRE. PROMPT SERVICE GUARANTEED.
Raw Silk Warping a Specialty.

WILLIAM RYLE & CO.,

FOREIGN AND DOMESTIC

SPUN SILK YARNS and NOILS

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

225 Fourth Ave., Corner 18th St., NEW YORK CITY

four months will develop much activity in their line. The following are prices current:

European

Grand Extra Classical Piedmont 12/14	5.05-5.10
Extra Classical Italian 12/14 12/16	4.70-4.75
Classical Italian 13/15 24/26	4.50-4.55
Best No. 1 Italian 13/15 24/26	4.45-4.47½

60 days' basis

Japan

Filature Kansai Extra Extra	4.60-4.70
Filature Kansai Extra 13/15	4.40-4.45
Filature Shinshu Extra 13/15	4.45-4.50
Filature Kansai Best No. 1 13/15	4.20-4.25
Filature Kansai No. 1 13/15	4.05-4.10
Filature Shinshu 13/15	4.00-4.05
Rereels No. 1 13/16	Nominal
Rereels No. 1½ 13/16	Nominal
Rereels No. 1½-2	Nominal

6 months' basis

China

Canton XXA 14/16 (new silk)	3.40-3.45
Canton XXB 14/16	3.22½-3.25
Tsatlee Blue Dragon and Flying Horse	3.20-3.25
Tsatlee Kun Kee Mars No. 1	2.80-2.85
Tussah Filature Eight Cocoon No. 1-2	1.30-1.35

6 months' basis

SPUN SILK

Nothing new can be said about this product, unless it is that the manufacturers of spun silk are very busy and have orders ahead which will last them for some time to come. They are very optimistic as to the future and expect the demand for their product will exceed that of last year covering the same period. Below are prices current which remain the same:

60/2	3.80
50/2	3.70
40/2	3.60
30/2	3.45
20/2	3.35
10/2	3.25

ARTIFICIAL SILK

The artificial silk manufacturers report that business has improved to a certain extent and the demand for their product shows quite a gain over last month. The braid manufacturers, to whom much of this product is sold, are having a better business and are buying more artificial silk. It is thought by the former manufacturers that a large demand for their product will manifest itself during the fall months. At that time, it is

A. P. Villa & Bros.

Raw, Thrown and Dyed Silks

Silk on Quills or Beams. Hosiery Silk on Cones

Societa per la Filatura dei Cascami di Seta, Milan (Italy)
Cascami Silk Spinning Company of America

"Cascami"

Schappe, Spun Silk, Cordonnets for Sewing in Skeins—on Cops—Spools —Cones—Beams.
In Gray or Dyed.
Special attention to regularity of sizes.

A. P. Villa & Bros.

Sole Agents for the United States and Canada

Emmett Building, 95 Madison Avenue, New York

Tel. 10080 Madison Square Mills: Passaic, N. J.

SPUN SILK

YARNS FOR ALL PURPOSES

AMERICAN SILK SPINNING CO., PROVIDENCE, R.I.

MINDLIN & ROSENMAN

Importers and Manufacturers of

Our Specialty;
DYED SILK FOR THE KNITTING TRADE
on cones and tubes

RAW and THROWN SILK, ARTIFICIAL SILK

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thought that the hosiery manufacturers will again be in the market for this product. Prices remain the same and are quoted below:

150 Deniers First Quality European	1.90
150 Deniers Second Quality European	1.80
150 Deniers English A.—Bleached	1.90
150 Deniers English B.—Bleached	1.80
150 Deniers English C.—Bleached	1.70
150 Deniers Elberfeld Raw	1.72
150 Deniers Chardonette Natural	1.85

SILK MILL NEWS

New Mills.

*Massachusetts, Turners Falls. Manufacturing was started July 1 at the plant of the new McLane Silk Company and about 100 hands have been given employment. Broad silks are manufactured on present equipment of 100 looms. This company has capital stock of $75,000, and F. A. McLane is president and buyer; C. E. Hazelton, treasurer, and P. P. Bauer, superintendent. F. W. Heinrich & Bro. are the selling agents.

New Jersey, Paterson. A company has been organized under the name of the K. & R. Silk Company to manufacture silk at 110 N. Third St. The members of the company are Samuel Kaminsky and Samuel Rothstein.

*Pennsylvania, Avoca. It is expected the new silk throwing mill in which John Ramsay, formerly superintendent of the Shamokin plant of J. H. and C. K. Eagle, is interested, will be in operation by the first of August, and will employ about 50 hands, operating the plant day and night. The new mill will be a 1-story and basement wooden structure, 50 by 120 feet.

*Pennsylvania, Doylestown. Good progress is being made on the construction of the new silk mill being built as an extension of Bitzer Bros. Silk Mill. As noted recently this new building will adjoin the Bitzer Bros. Silk Mill and will be 50 by 190 feet. On its completion the looms now in the plant of Bitzer Bros. Silk Mill will be moved into the new space and the equipment increased to 35 looms for weaving ribbons. The space in the old mill vacated by the removal of this machinery will be occupied by the Royal Silk Company, manufacturers of broad silks, who are planning to add a number of looms to their equipment.

*Pennsylvania, Lebanon. A branch plant is being established by the Lebanon Silk Company in a building at Front and Lehman Sts., formerly used as a hat factory. It is understood that 60 looms with preparatory machinery will be installed and that manufacturing will be started within three weeks. Fancy, plain and novelty silks are manufactured.

Enlargements and Improvements.

*Connecticut, South Manchester. Rapid progress is being made on the new mills for Cheney Bros. The new dye house will be 80 by 326 feet, 2 stories high, and the weave shed will be 150 by 321 feet, 2 stories high. It is planned to have the two buildings ready for occupancy by fall. Details of the extensive new construction work being done by Cheney Bros. have been given previously.

SILK MILL NEWS

Delaware, Wilmington. Additions to the buildings occupied by John Hand & Sons, Inc., manufacturers of broad silks, ribbons, etc., with 3,100 spindles, 104 broad looms and 36 ribbon looms, are about to be made at a cost of $12,000. The contract has been let for the work and it will be started at once.

New Jersey, Paterson. Blake Bros. & Govin will move from the Piaget Mill on Godwin St. to the Sowerbut Mill, Paterson St., on August 1, and add a number of new looms.

New Jersey, Paterson. M. Bornstein Sons, who will take space in the new plant of the Neuviller Silk Co., Inc., being erected on Garfield Ave., will make an addition of 24 more looms to their equipment.

New Jersey, Paterson. S. Cohen will move from 48 Straight St. to the new Reinhardt Mill on State St., and add more looms.

*New Jersey, Paterson. It is expected that manufacturing will be started October 1 in the new addition to the plant of the Neuviller Silk Co., Inc. About fifty hands will be employed in the addition and more silk throwing machinery will be added on its completion. The plant is operated by steam power. Details of this new construction work have been given previously.

New York, Dunkirk. Arrangements are being made to enlarge the plant of the American Glove Co. by the erection of another building adjoining the south side of the present three-story structure. Plans are being drawn and work on the new building will be started about August 1st. Several months ago the third story was built on the present building. The latest addition will be two stories high on a site 123 by 100 feet. It will be of brick construction, similar in style to the present building and will be used for the weaving department. The American Glove Co. is a branch of the Niagara Silk Mills at No. Tonawanda. J. T. Shanahan, the treasurer and manager, recently stated that the new plant at Brantford, Ont., is being built. O. E. Elwell, who has been superintendent of the Dunkirk plant, has been promoted to the position of general superintendent of all the plants, with headquarters in No. Tonawanda.

*New York, Port Jervis. It is reported that contract has been awarded to the B. & W. Concrete Co., of Newark, N. J., for the new silk mill to be built here by Kattermann & Mitchell Company. Plans are underway to begin work immediately on the new 2-story mill building. As previously noted, a mill is to be erected at a cost of about $35,000 and machinery now operated in Paterson is to be moved to Port Jervis. At present a branch mill is operated here and this consolidation of the larger plant with the smaller branch is due to the unsettled labor conditions.

*Pennsylvania, Allentown. Progress is being made on the three-story brick addition, 55 by 140 feet, to the plant of the Rionor Silk Co. at South Allentown. The estimate of cost is $30,000. The Rionor Silk Co. manufactures narrow ribbons on present equipment of 84 looms. Clarence T. Davis is secretary and treasurer and Henry Hautman is superintendent.

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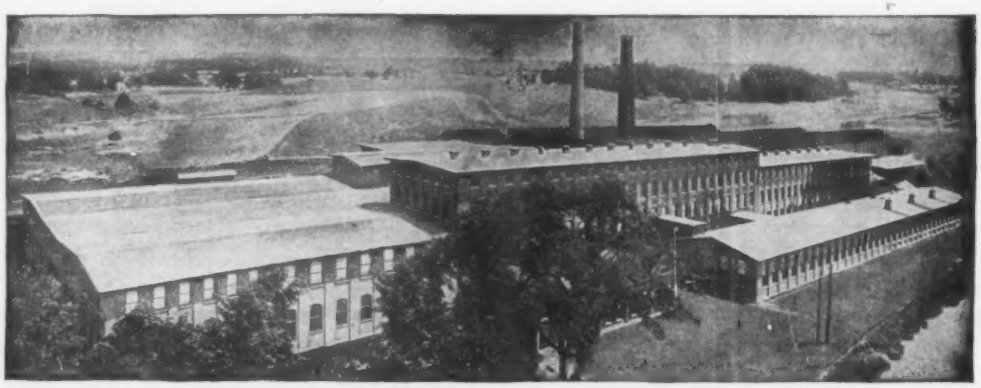

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SURPLUS AS REGARDS POLICY HOLDERS .. 17,873,019.69
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DYESTUFFS AND CHEMICALS

Acetic, 100 lbs.	2.16-2.56
Citric, domestic	38
Copperas	65-80
Oxalic	7-8
Sulphuric, 66°, 100 lbs.	1.00-1.25
Muriatic, 18°	1.15-1.65
Tartaric crystals	30-33

Miscellaneous Chemicals and Dyestuffs

Acetate of lime, gray, 100 lbs.	2.50-2.60
Alum, lump	1.75-1.90
ground	1.85-2.00
powdered	3.00-3.15
Aqua ammonia, 26°	2-5½
Borax	3-5
Cream tartar, crystals	23-25
Fuller's earth, powdered, ton	17-20
Glauber's salt	75-85
Potash, chlorate, crystals	8-9½
powdered	9-14
carbonate	3-6
Soda, bicarbonate	1.15-1.50
Soda, caustic, domestic, 60 per cent.	1.80-1.91
Sal., American	65½-85
Vitriol, Blue	4.76-5.00
Acetate of soda	4-6½
Acid, picric, best crystals	70-75
tannic, commercial	36-37
Albumen, egg	42-65
blood	20
Aniline, oil	8½
salt crystals	8-9
Alizarine	15-16
Bichromate of potash, American	7-8
Bichromate of soda	4½-7½
Bisulphite of soda	75-1.25
Cutch, bales	4½-8
Dextrine, imported potato	4-7
Divi-divi, ton	33-47

FIRES.

Canada, Quebec, Lachute Mills. The plant of the Lachute Knitting Co. Ltd., manufacturers of felts and similar goods, has been destroyed by fire with loss of about $40,000. No decision has been reached as yet in regard to rebuilding.

Connecticut, Danielson. A fire at the plant of the Connecticut Mills Company was extinguished by an automatic sprinkler with small loss. The mills are running day and night.

Maryland, Hagerstown. The plant of the Antietam Knitting Co., manufacturers of seamless half hose, was recently struck by lightning and the buildings destroyed by fire, entailing a loss of $75,000 with an insurance of less than $50,000.

Massachusetts, Cherry Valley. A fire in the picker room of the Chapel Mills Mfg. Co. was extinguished by men in the department with very little damage.

Massachusetts, North Adams. A loss amounting to several hundred dollars was caused by a blaze which started in a pile of waste at the plant of the North Adams Manufacturing Co.

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SILK MILL NEWS

*Pennsylvania, Avoca. The new silk mill, in which John Ramsay, formerly superintendent of the Shamokin plant of J. H. & C. K. Eagle, is interested, will be operated entirely on crepe, grenadine, chiffon, and all other special hard twist thread. It is expected to have the plant in operation by the first of August. About 100 hands will be employed and it is expected to have a weekly production of 1,500 pounds. As noted recently the new mill will be a 1-story and basement wooden structure, 50 by 120 feet.

Pennsylvania, Chester. The old Patterson Mills, formerly operated on linen fabrics, has been sold to the Victor Motor Car Company of Philadelphia, who will transform it into a plant for the manufacture of automobiles. The price paid for the property is reported as being $300,000.

Pennsylvania, Danville. Three new companies have been formed to take over the plants of F. Q. Hartman, Inc., and the Nam-Trah Knitting and Spinning Company. Mr. Hartman will retire entirely from active business. The first company will be known as the Jouvard & Lavigne Co., and consists of the Montour Mill and the Nemoloton Mill, of this place, the Colonial Spinning Mill of Berwick, and the Seminole Mill, of Riverside. The second company will be known temporarily as F. Q. Hartman, Inc., and will operate the Ontiora Mills here, the Herndon Spinning Mills, Herndon, and the Pequot Silk Mills, Inc., of Shickshinny. The third company will be known as the Nam-Trah Knitting and Spinning Company, and will operate the plant here of the company of the same name.

*Pennsylvania Easton. The new Easton Silk Dyeing & Finishing Company has not yet started to handle cotton goods. This company was organized a few months ago with capital stock of $50,000 to do a business of dyeing and finishing silk and silk mixed goods and constructed a new plant. Andrew J. Keenan is president, and Theo. Wunderlich is treasurer.

*Pennsylvania, Easton. About fifty additional hands will be given employment when the enlargement under construction for the Easton Silk Company is completed. The new equipment will be operated by electric power.

*Pennsylvania, Marysville. J. P. Lilley, secretary of the Board of Trade, states that nothing definite has been decided as yet in regard to the proposed new silk mill. Details of this project have been given previously. If enough employes can be secured construction work will soon be started.

Pennsylvania, Parkers Landing. The Parker Woolen Mills, Inc., are advertising for custom spinning of woolen and merino yarns, 4s to 25s cut.

Dobbins Soap Mfg. Co.
PHILADELPHIA
Makers of Soaps Especially Adapted for All Kinds of Textile Mfrs. Use. Send for Sample.

MISCELLANEOUS.

*Pennsylvania, Easton. Construction work was started July 13th on a new building for Alexander Smith & Son at the corner of Glendale and Center Sts., South Side. On the completion of this new building, about September 15, the capacity will be increased and employment given to about thirty hands. They are commission warpers and winders.

*Pennsylvania, New Holland. The new mill under construction for Storb-Snader & Company is expected to be finished about August 15. Most of the new equipment has been ordered for the first installation but some space will remain for further additions.

Pennsylvania, Stroudsburg. The new mill being constructed by Lippman & Abrash is being roofed in and is promised for occupancy August 1, at which time they expect to move in and install a number of looms.

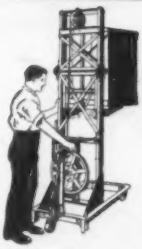
*Rhode Island, Central Falls. Manufacturing will be started October 1 in the new mill being erected here for the Bengal Silk Mills. Broad silks are manufactured. It is expected that a part of the machinery will be installed by August 1.

Rhode Island, Phenix. A new machine used in the manufacture of silk lace shawls and other high grade lace products, has been installed in the plant of William Stoppard & Co., manufacturers of silk lace goods. This machine is one of six now in operation in this country, four being used in New York, and the other two at the plant of the local company.

*Canada, Ontario, Cobourg. The Cobourg Felt Company has been organized by George W. Charles with capital stock of $200,000 to manufacture felt and felt boots and shoes. It was noted recently that Mr. Charles had purchased a part of the premises of the Cobourg Matting & Carpet Co., Ltd. Between 50 and 200 hands will be employed in the new mill. The product will be sold direct and the plant will be operated by steam and electric power.

Canada, Ontario, Guelph. Dominion Linens, Ltd., is the name of a company which is now in the process of formation. The chief place of business will be in Guelph, although the company also expects to operate mills in Tillsonburgh, Ont. Ferguson & Sanson, investment bankers and brokers, Continental Life Bldg., Toronto, Canada, are promoting the project, and at the present time are the ones who have the matter in charge.

Canada, New Brunswick, Dorchester. Outside interests acting through the Nova Scotia Trust Co. are reported to have taken over the Oxford Worsted Linens, Ltd., with the intention of increasing the plant and extending the distribution of the concern's products.



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To architects, engineers and owners we say—Incorporate The Barrett Specification in full in your building plans.

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FALL RIVER MILLS

	Bid.	Asked.	Last Sale.
American Linen Co.	...	70	...
Arkwright Mills	...	62	...
Barnard Mfg. Co.	...	55	...
Bourne Mills	...	110	...
Border City Mfg. Co.	...	96	...
Chace Mills	99	...	...
Charlton Mills	83	...	...
Cornell Mills	85	...	...
Davol Mills	...	90	...
Davis Mills	83	...	...
Flint Mills	...	100	98
Granite Mills	...	...	...
Hargrave Mills	...	50	...
King Philip Mills	102	...	...
Laurel Lake Mills	...	110	...
Lincoln Mfg. Co.	...	...	...
Luther Mfg. Co.	...	126	...
Merchants' Mfg. Co.	...	82	...
Mechanics' Mills	80	83	...
Narragansett Mills	...	102	...
Osborn Mills	...	100	...
Parker Mills	...	45	...
Pocasset Mfg. Co.	...	101	...
R. Borden Mfg. Co.	119	...	...
Sagamore Mfg. Co.	170	...	...
Seaconnet Mills	...	55	...
Shove Mills	70	...	...
Stafford Mills	...	80	...
Stevens Mfg. Co.	...	127	...
Tecumseh Mills	100	105	...
Troy C. & W. Mfg.	...	...	...
Union Cot. Mfg. Co.	...	...	...
Wampanoag Mills	...	79	...
Weetamoe Mills	...	87	...

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	137½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	...	115
Booth Mfg. Co., com.	...	21
Booth Mfg. Co., pfd.	...	50
Bristol Mfg. Co.	...	67½
Butler Mill, com.	...	90
Butler Mill, pfd.	...	100
City Mfg. Co.	...	92
Dartmouth Mfg. Co., com.	127½	...
Dartmouth Mfg. Co., pfd.	97½	...
Gosnold Mfg. Co., pfd.	...	89
Grinnell Mfg. Co.	...	180
Holmes Mfg. Co., com.	102	...
Holmes Mfg. Co., pfd.	105	...
Kilburn	115	120
Manomet	...	114½
Nashawena Mills	65	67½
N. B. Cotton Mills Co., com.	100	...
N. B. Cotton Mills, pfd.	...	96
Neild Mfg. Co.	...	95
Nonquitt Spinning Co.	...	94
Page Mfg. Co.	...	77½
Pierce Mfg. Co.	295	300
Pierce Bros., Ltd.	100	...
Potomska Mills	115	...
Quissett Mills, com.	...	98
Quissett Mills, pfd.	100	102½
Sharp Mfg. Co., com.	...	85
Sharp Mfg. Co., pfd.	...	100
Soule Mills	...	80
Taber Mills	...	100
Wamsutta Mills	115	118
Whitman Mills	...	123

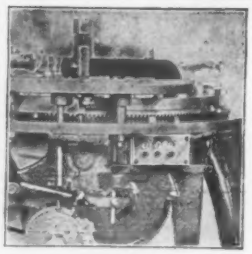
OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	62
Amoskeag Mfg. Co., pfd., N. H.	100	100
Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80
Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	215
Bigelow Carpet Co., Me.	100	213¼
Boott Mills	100	98⅓
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	85
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mfg. Co., Me.	100	1021¼
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	187¼
Everett Mills, Mass.	100	112¼
Fisher Mfg. Co., Mass.	100	125⅛
Franklin Co., Me.	100	201¼
Great Falls Mfg. Co., N. H.	100	170⅝
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., N. H.	1000	985
Lancaster Mills, Mass.	100	75
Lawrence Mfg. Co., Mass.	100	151¾
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	125
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	120
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	116
Merrimack Mfg. Co., com., Mass.	100	245⅛
Merrimack Mfg. Co., pfd., Mass.	100	83½
Middlesex Co., Mass.	100	55
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	100
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	172
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1852½
Pacific Mills, Mass.	100	107
Pepperell Mfg. Co., N. H.	100	305
Plymouth Cordage Co., Mass.	100	228
Salmon Falls Mfg. Co., N. H.	300	150
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndyke Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	100⅜
Waltham Bleachery & Dye Works, Mass.	100	145
York Mfg. Co., Me.	100	85

SOUTHERN MILLS

	Bid.	Asked.
Abbeville	85	100
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Aragon, com.	59	...

ELM CITY COUNTER



registering the number of sweaters turned out on a

LEIGHTON KNITTING MACHINE

The Counter is easily attached and keeps accurate record of the machines output. Our Counters are adaptable to all purposes and are extensively used for counting yards, picks and other units in textile manufacture

They Save Waste, Prevent Errors and Disputes

We have a variety of Counters for textile mill uses.

The C. J. ROOT CO. . BRISTOL, CONN.

Ask for "Catalog 18."

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READING, PA.

High Grade
Grey Iron Castings

MAKING A SPECIALTY OF
SOFT IRON
guaranteed to be easily machined.

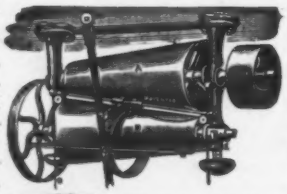
Castings Sand Blasted or Tumbled, as desired.

Write for particulars and estimates.

Variable Speed Countershafts

The Evans Friction Cone Pulleys will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.

They are guaranteed to do your work.



We'll furnish them for either floor or hanging use.

Over Ten Thousand Sets in Operation in this Country and Europe.

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G. Frank Evans. Newton Center, Mass.

Avondale	120	126
Arlington	130	...
Brogan Cotton Mills (new series)	...	81
Brookside	...	...
Cannon	125	...
Cabarrus	120	...
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Chiquola Cotton Mills, pfd.	80	...
Clifton, com.	80	...
Clifton, pfd.	96	100
Clara	100	...
Cliffside	190	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Drayton	29	...
Erwin, pfd.	...	105
Easley	...	185
Exposition	...	210
Florence	125	128
Gaffney Manufacturing Co.	59	...
Gibson, com.	109	110
Gluck	...	100
Graniteville, S. C.	140	152
Grendle	...	96
Glenwood	...	150
Glen Lowry, pfd.	...	76
Highland Park	200	203
Highland Park, pfd.	...	102
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	117
Inman, com.	...	108
Inman, pfd.	...	100
Kesler	...	160
Lancaster Cotton Mills	130	...
Lancaster Cotton Mills, pfd.	96	...
Lanet	...	112
Laurens	127	136
Lockhart, S. C.	...	72½
Loray Mills, pfd.	...	86
Modena	...	150
Mollohon	...	101
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-six	130	140
Orr	...	86
Ozark	100	110
Parker Mills, com.	7	10
Parker Mills, pfd.	30	35
Parker Mills, guar.	...	88½
Pacolet Mfg. Co., com.	...	108
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Pelzer Manufacturing Co.	125	164
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Riverside Manufacturing Co.	...	78
Salisbury	150	...
Roanoke Mills	...	155
Saxon	114	...
Spartan	100	...
Toxaway	...	78
Union Buffalo, 1st pfd.	34	51
Union Buffalo, 2d pfd.	...	10
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	7	...

Washington Mills, pfd.	100	...
Woodside Mills Co., com.	...	38½
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Wiscasset	140	150
Woodruff	...	107
Woodlawn	120	126
Young Hartsell	70	...

MISCELLANEOUS.

*Canada, Ontario, Toronto. Patent Twines, Ltd., a corporation organized several months ago with capital stock of $40,000, has established a plant on Esplanade Ave., Toronto, under the management of E. H. Wilkinson, and is manufacturing twine from paper and flax.

*Connecticut, Hamden. The addition being built to the weave shed of The American Mills Co., Hamden Branch, will be 200 feet long and 120 feet wide. This plant was formerly known as The New Haven Web Co. No arrangements have been made as yet for machinery which will be installed and particulars of the new equipment have not been fully worked out. As noted in a previous report, The American Mills Co. of Waterbury, Conn., The New Haven Web Co. of Hamden, Conn., and The Narrow Fabric Corporation of Orange, Conn., have consolidated under the name of The American Mills Co. with general offices at Waterbury, Conn. The Waterbury plant will hereafter be known as The American Mills Co., Waterbury branch; The New Haven Web Co. as The American Mills Co., Hamden branch, and the Narrow Fabric Corporation as The American Mills Co., New Haven branch. There will be no change in the general conduct of the business, yarns being purchased at Waterbury and factory supplies at the individual plants, as heretofore.

Connecticut, Springdale. The British American Manufacturing Co., Inc., waterproofers of textile fabrics, have removed their plant from Laurel, Md., to a plant formerly owned by the Interstate Rubber Co. and have taken over their business.

Enlargements and Improvements.

Connecticut, Rockville. A decision will be reached within ten days or two weeks by the James J. Regan Mfg. Co. regarding the building of a five-story steel and concrete mill, 350 by 75 feet. If it is decided to build contracts will be awarded at once. A house on the site selected for the proposed new mill has been moved.

New York, Auburn. The Nye & Wait-Kilmarnock Corporation, recently organized with capital stock of $360,000, as noted, will add a number of looms. Charles L. Fetterly, of Philadelphia, has been elected president; George H. Nye, treasurer and E. A. Jones, superintendent.

Wrisley's Soaps

For All Textile Purposes

All of our Textile Soaps are scientifically compounded of best possible selected ingredients. They are

GUARANTEED ABSOLUTELY PURE AND PRICES RIGHT

and every lot thoroughly tested before leaving our plant. Write for samples and prices, stating kind desired.

ALLEN B. WRISLEY CO.

Textile Dept.
Chicago, Ill., U.S.A.

RATS KILLED BY SCIENCE

By the use of the wonderful bacteriological preparation discovered and prepared by Dr. Jean Danysz, of Pasteur Institute of Paris. Used with striking success in the United States and Europe for many years.

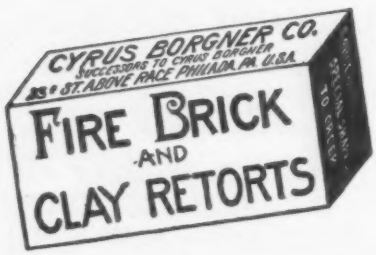
DANYSZ VIRUS

contains the germs of a disease peculiar to rats and mice only and is absolutely harmless to all animals other than mouse-like rodents. Because of the feverish condition caused by the Virus the Rodents die in the open. The disease is also contagious to them. HOW MUCH TO USE: For factory and mill buildings, from one to two dozen tubes for each 5,000 square feet of floor space. PRICE: One tube, 75c; 3 tubes, $1.75; 6 tubes, $3.25; one dozen, $6.00.

DANYSZ VIRUS LIMITED, Dept 4, 72 Front Street, New York

TANKS

Built Right



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Taunton-New Bedford Copper Co.

New Bedford, Mass.

OUR GUARANTEE:
SUPERIOR QUALITY PROMPT SHIPMENTS

MISCELLANEOUS.

Massachusetts, East Weymouth. The East Weymouth Wool Scouring Co., scourers and sorters of wool, are building an enlargement which will increase the capacity about one-third.

Massachusetts, Lawrence. Plans have been made for a rearrangement of the plant of the Farwell Bleachery, made necessary by the seizure of land for the new Central Bridge. Work has already been started on tearing down a section of the Atlantic Mills property on the opposite side of the river.

Massachusetts, Lowell. With reference to the report that the Lowell Bleachery has leased a mill building owned by the Hamilton Mfg. Co., Treasurer Sidney Coolidge states that this building will be used exclusively for the cutting up, hemming and packing of various kinds of towels. The total floor space is about 35,000 feet.

Massachusetts, Rockland. A building formerly used as a shoe factory, at the corner of Howard and Park Sts., has been purchased by the Rockland Webbing Company. The purchasers plan to tear down the structure and erect a new building or to remodel it and to make extensive improvements. Work will be started immediately. It is stated that the purchase of this property will enable the Rockland Webbing Company to install 22 additional looms.

*Michigan, Port Huron. A mill building will be leased or purchased by the Summers Linen Co. to take the place of the plant destroyed by fire early in June and the management expects to resume manufacturing in about ninety days. As noted in a previous report, the branch plant at Milford, N. H., is to be moved to Port Huron and the business concentrated here. Lines of linen damask, napkins, piece goods, dress goods and towels will be made, using 16s to 60s linen yarns. The equipment will include 3,000 spindles and 150 automatic looms. Steam and electric power will be used. James Walton, who has been manager of the Milford plant, will move to Port Huron and act as manager and buyer.

New Jersey, Paterson. Alfred Crew, proprietor of Crew's Silk Finishing & Piece Dye Works, sailed for England on July 1 and will visit some of the principal silk centers and order some machinery for a new piece dye works plant which he is going to build on a tract of land just purchased at Dundee Lake. It is stated that Mr. Crew proposes to erect the largest independent silk piece dye and finishing works in the country.

*Ohio, Carthage. In about thirty days work will be started on the 3-story addition, 75 by 40 feet, to be built to the plant of the Union Thread Company. This concern does a business of bleaching, dyeing and finishing yarn for manufacturers. E. T. Allan is president; C. W. Allan, treasurer and superintendent; and J. E. Allan, agent and buyer.

*Ohio, Marion. The largest building of the Smith Mattress Co. was destroyed in the recent fire with a loss of $5,000 above the insurance. All their energies at present are being directed toward the equipment of temporary quarters, but they expect to rebuild later.

The WM. H. LORIMER'S SONS CO.,

MERCERIZERS AND DYERS

Manufacturers of

MERCERIZED YARNS

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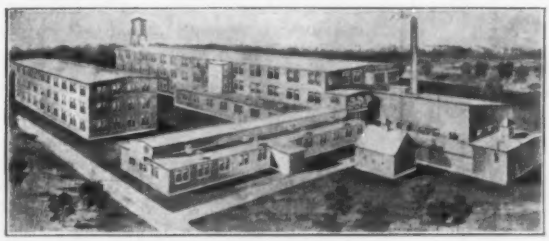
HOME BLEACH AND DYE WORKS, Inc.



DYERS, BLEACHERS AND MERCERIZERS OF

COTTON YARNS

IN SKEIN, AND LONG AND SHORT

CHAIN WARPS

FAST COLORS A SPECIALTY

Daily Capacity 20 Tons

FAST COLORS AND BLACK FOR WORSTED TRADE

Office and Works, Pawtucket, R. I.

ESTABLISHED 1881

GLOBE DYE WORKS CO.,

Successors to R. Greenwood & Bault

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Dyers of Peerless Black on Artificial Silk.

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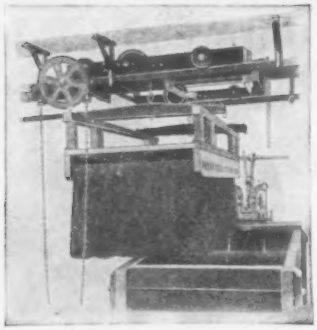

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No stretching, breaking, tangling or felting
Loftiness preserved

First cost lowest. Repeat orders from all. Repairs nothing compared with other types. References on application.

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Manufacturers of the celebrated

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De-Sizing

Bleachers, Finishers and Dyers have complained that Malt de-sizing compounds were expensive and hard to handle.

DIAX

made by the **Malt-Diastase Company** brought down the price and made its use easy.

DIAX

because it is better is being used with great success by the largest Bleachers, Finishers, Printers and Dyers.

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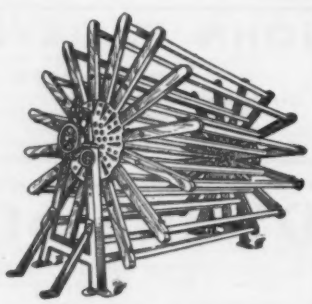
Leaves yarn in beautiful condition—Bailey's Cold Air Drying System

Yarn dried by this system is much softer, winds and weaves better, shows less percentage of waste and the colors develop better. In use in over two hundred mills. Simple, effective, inexpensive. Investigate its merits for your profits sake. Where great capacity is wanted my *hot air system* is unequalled.



Dye Sticks, Dry Poles, Fans, Trucks for Yarn Dryers and Dye Houses.

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that when you make suds with a hard water, *one and a half pounds* of soap for each degree of hardness are wasted in each thousand gallons of water used?

that this wasted soap, converted into sticky, insoluble "lime soaps," is precipitated on the fibers, yarns or goods, causing a harsh feel and reducing the quality of the product?

that it is impossible afterward to dye evenly or satisfactorily goods where these lime soap specks appear, or to give them a satisfactory high finish?

If you experience any of these troubles a

Permutit Water Softener

will end your troubles

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BLACK
BLUE
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And any combination to match any desired shade

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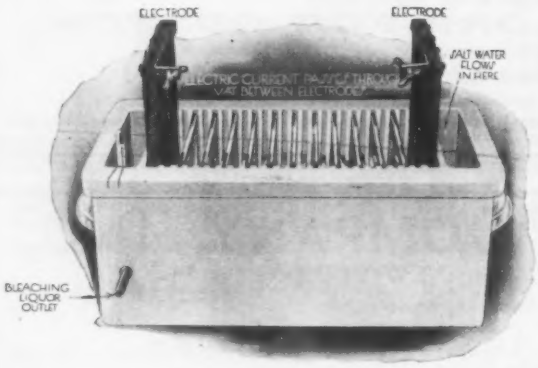
Make Your Bleach Out of Salt Water.



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Write, giving amount of lime used daily, current available, with costs.

We make machines of special construction for any purpose.

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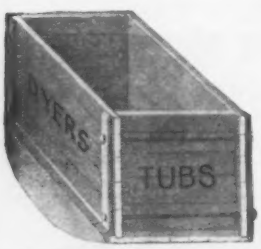

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MANUAL OF DYEING

By KNECHT, RAWSON & LOEWENTHAL. This is a new edit on, complete in two volumes of what is unquestionably in every sense of the word the best book on dyeing ever published in the English Language. No proprietor of a dye house and no dyer can afford to be without it. The work is divided into eleven parts and an appendix, covering the textile fibres, materials used in dyeing, coloring matters, machinery used in dyeing, analysis, etc. 902 pages; 120 illustrations; cloth.

LORD & NAGLE CO., 144 Congress Street, Boston

TWO VOLUMES $12

C. Woolford Wood Tank Manufacturing Company

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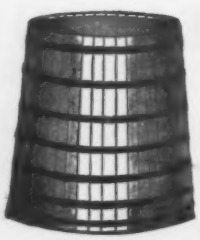

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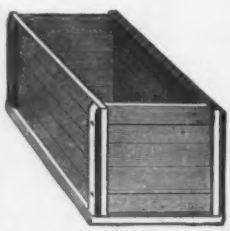
For Bleaching, Dyeing and Finishing

Reservoir Tanks of any Capacity or Shape for Sprinkler Systems and all purposes



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Mechanical Filters

GRAVITY AND PRESSURE TYPES

Cleanse Water—Save Losses—Promote Business Success

Norwood Filters are sold with a Guarantee which can be given because every one is built to suit location and condition.

We don't sell you any old filter but investigate first.
Then we build a filter to suit your requirements.

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Expert Advice Free of Cost

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of any size and shape

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FILTERS AND WATER SOFTENERS

Hungerford Filters having an aggregate capacity of over ONE HUNDRED MILLION GALLONS per day are now in operation in the textile mills of America

The Filters That Never Require A Renewal of the Filter Bed

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Braids and Edgings

FOR TRIMMING

Ladies' Ribbed Underwear

OUR MOTTO: Correct Goods
Right Prices
Prompt Deliveries

Mills: Wayne Junction, Philadelphia

Post Office Address,
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Full Fashioned Hosiery Machines

BUILT BY

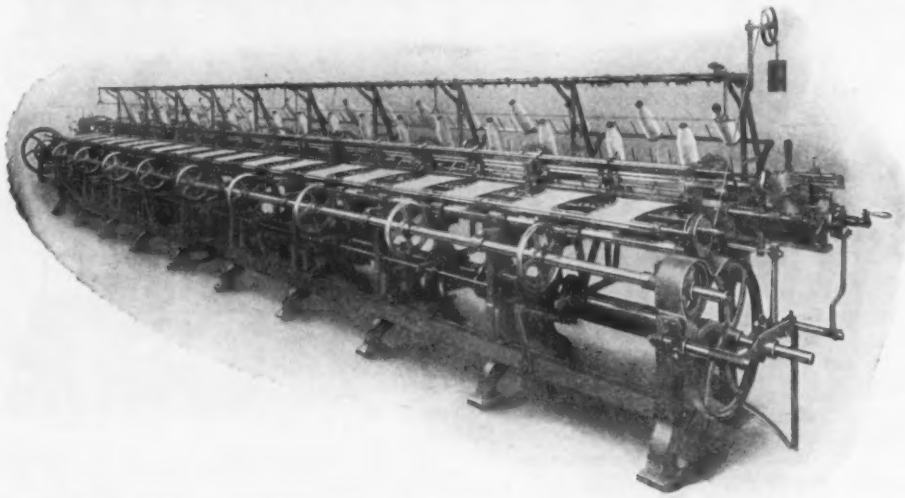
Schubert & Salzer Maschinenfabrik

and their two Branch Works

H. ALBAN LUDWIG and THEODOR LIEBERKNECHT

Chemnitz, Germany

Largest Manufacturers of all Classes of Hosiery Machines



Schubert & Salzer, in addition to the plant of H. Alban Ludwig, have recently acquired the plant of Theodor Lieberknecht and continue to build Full Fashioned Hosiery Machines in each of the three plants, retaining the special features of each individual type and at the same time using on all three machines various patented devices and all the practical attachments known to the trade. These machines are built in all gauges from 14 to 34 needles to the inch and from 12 to 24 sections.

Best Constructed, Most Economical and Productive Machines on the Market

REFERENCES:

All the leading manufacturers of full-fashioned hosiery in this country.

American Representative:

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THE GROSSER KNITTING MACHINE CO.

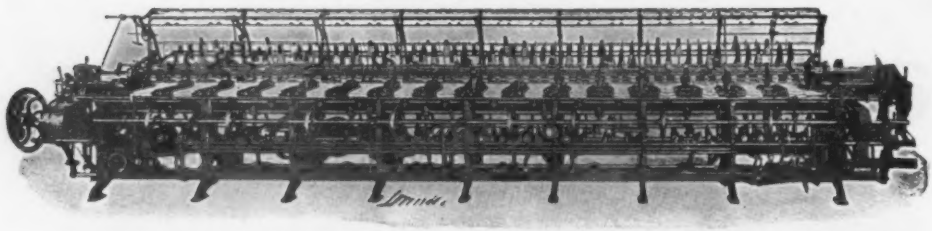
MAX NYDEGGER

Wool Exchange, 260 W. Broadway, New York

ALL SPECIAL MACHINES FOR ANY ARTICLE THAT IS KNIT

Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony**

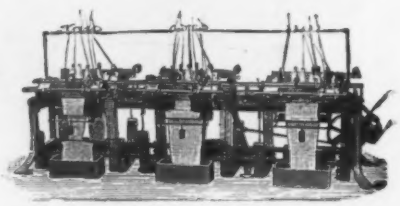


16 Section "COTTON HILSCHER" Machine for Full Fashioned Hosiery, Silk, Cotton, Wool, etc.

Gold Medal, Paris, 1900 — Numerous Patents Covering Special Improvements

GROSSER Flat Knitting Machines

For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



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C. Terrot Söhne, Cannstatt, Würt, famous builders of the best Circular Frame for Finest Underwear, Fleece Linings, Gloves, Special á-jour (openwork) Fabrics, etc.

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For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool, cotton.

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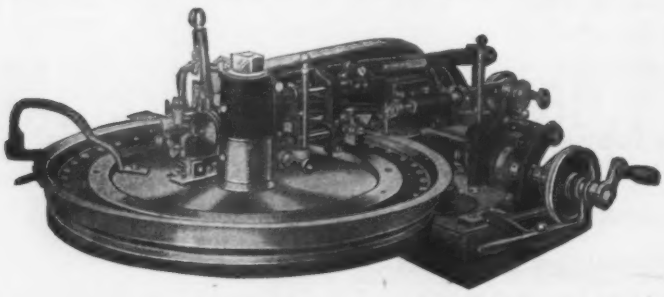
Two thread lock stitch machine with reliable trimmer and raveller producing *indestructible, flat elastic seam.* No hosiery or underwear plant up to date without this machine.



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for all classes of selvage goods, Full Fashioned Hosiery, Underwear, etc.

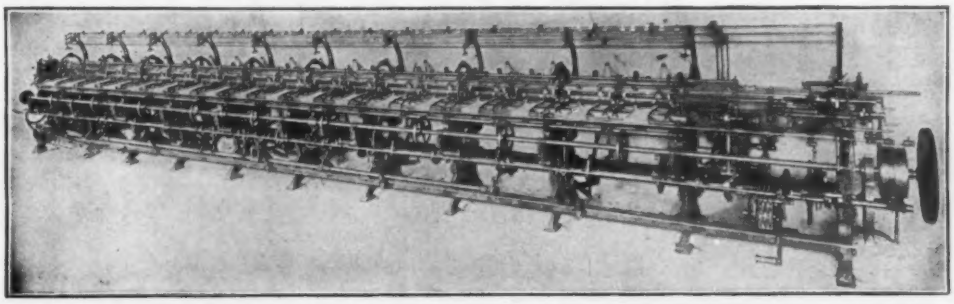
FINISHING MACHINES

for Knit Goods of all styles.

WINDERS

for finest yarns.

Information, Samples and Specifications at Your Disposition.



Full Fashioned Hosiery Machines

MANUFACTURED BY

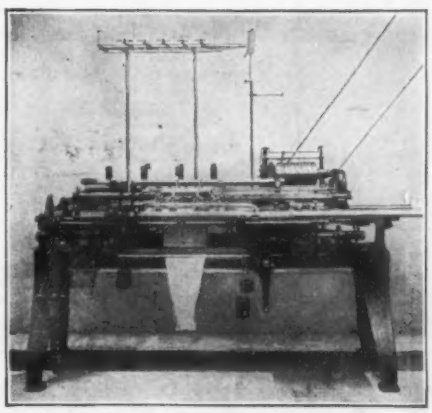
David Richter, Inc., Chemnitz, Saxony

Built in all gauges, any number of sections, and with any attachments desired.
Best constructed, easiest running and most productive machines on the market.
LACE MACHINES, system "Gothrough," **NETTING MACHINES,** system "Double Locker," **LACE CURTAIN MACHINES.**

Dubied Knitting Machines

BUILT BY

Edward Dubied & Co., Couvet, Switzerland



The most perfect knitting machines that skill and experience can produce.

Designed for the highest possible production and the greatest endurance.

Full automatic, semi-automatic and **hand machines,** for **links** and **links,** (pearl stitch) flat and tubular **automatic widening, jacquard, shaker, accordion bias neckties.**

Machines can be seen in operation.

Complete stock of supplies carried in New York. All parts interchangeable.

Kuechenmeister winders, Standard overseamers, whipstitch overseamers with automatic trimming attachment.

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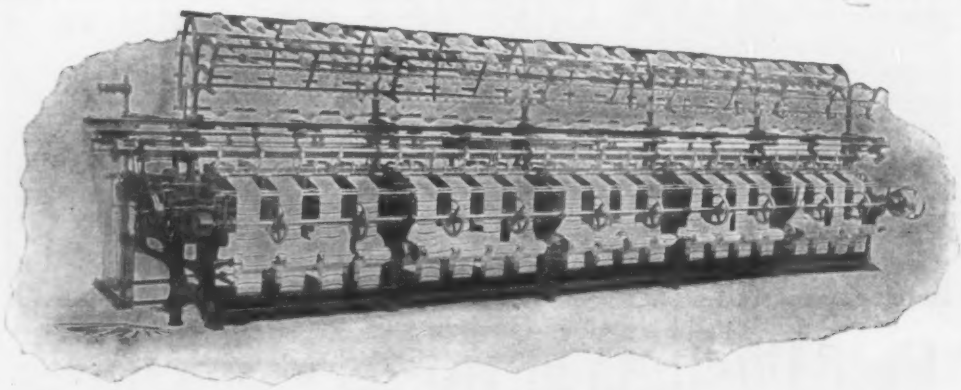

A Twenty Division Fast Rib Top Frame "Boer" Type

OUR BEST LINES

The "BOER" Straight Rib Frame

Fast
Simple

Makes perfect web French welt, striping checks, racked effects, shot ribs, etc.

PERFECTION SILKS

Cottons System Rib Frame

Full fashioned ribbed hosiery with shot effects. Beautiful lace designs also with shot effect.

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For finest and highest grades of hosiery in silks, lisles, etc. up to 57 gauge.

Flat Knitting Machines

Hand or power

for

Every requirement

Any guage
Any size
Any number of heads

Jacquard effects
Tartar effects
Fancy tuck effects

for

Sweaters
Golfers
Coats
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Gloves, etc.

The very latest in Links and Links

Machines hand or power. with or without jacquard.

Circular Machines

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Plain flat work
Lace open work
Collarettes

Striped work
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etc.

Built up to

Forty needles per inch

Any size up to 60" diam.

Up-to-Date Loopers

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Auxiliary machinery of all kinds and special machines to clients own specifications.

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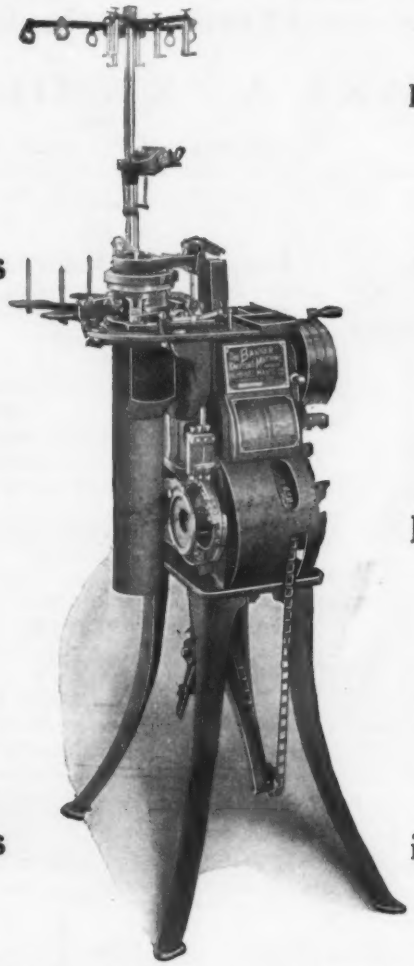
NEW MODEL

Banner Full Automatic Hosiery Machine

A FEW OF THE NEW FEATURES

Over
16,000
Banner
Machines
in
successful
operation



All working parts accessible from *front* of machine

Five - Yarn Changing Levers

Automatic Transferring Device

New and *Novel* Device for High Splice and Double Sole Slackening

New Yarn Engaging Device

High Speed in *Heel* and *Toe*

Single Pick

Average
production
100 machines
a week

Over 4800 machines sold and delivered in 1913 as compared with 3700 in 1912

HEMPHILL MFG. CO.

131 Clay Street - - Pawtucket, R. I.

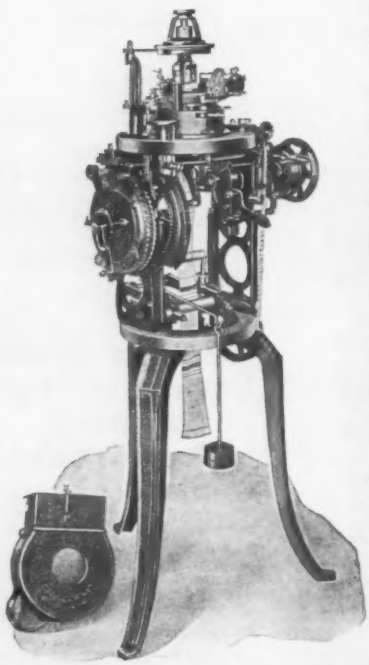
The Superior Advantages

of the

WILDMAN RIBBERS

are sometimes overlooked

HERE ARE A FEW OF THEM



Accuracy. For which Wildman workmanship is justly noted. Benefits of this arise from features too numerous to mention. Many of the surfaces are ground.

Durability. The Wildman ribbers undoubtedly have more hardened parts than any other ribber. Welt levers, take-up worms, etc., outwear similar devices.

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Reliability. The Wildman ribber stop motion has never been equalled. The brake matches it. The welt lever motion is positive and sure.

General Features. The Wildman ribber is the only one with a chainless pattern mechanism, the popularity of which is a sufficient recommendation. The power transmission provides a quick stop and a gentle start. The two speed drive is supplied if desired. The Wildman automatic striper has no peer.

There are many other advantages worthy of investigation. Investigate in your own interest.

The Science of Knitting. A pocket text and reference book for everybody concerned with knitting, sent postpaid on receipt of $3.00

WILDMAN MFG. CO.

MFG. CO

Trade Mark

Established 1889

NORRISTOWN, PA.

A New "Union Special"

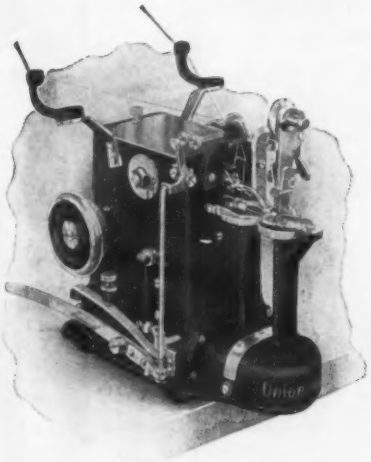
Cup Feed Machine for Seaming Selvage Edge Hosiery

Quiet, Light Running, High Speed

Double Thread Interlock Seam
perfectly flat and non-irritating

Ends of Seams Locked
giving looper finish

Finest Gauge Silk Fabric
To heaviest cotton hose seamed with equal facility



Improved Adjustable Uncurling Device
insuring perfect seam

Both Feeding Cups Actuated
insuring positive feed upon both selvages, avoiding puckered seam

Quickly Adjustable Stitch Regulator
without interchanging parts.

Union Special Machine Company

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BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

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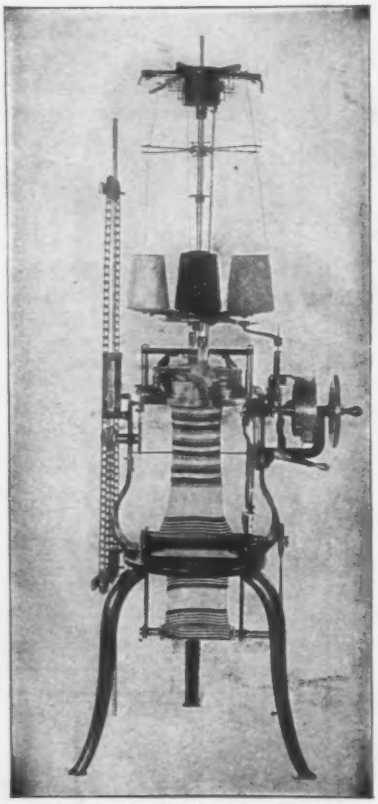
Hosiery Boards

1914

CRANE MFG. CO.

Established 1870 — LAKEPORT, N. H. — Incorporated 1890

Spring and Latch Needle Machines
for Both Rib and Plain Work
Economically Producing
A GREAT VARIETY OF FABRICS



Improved Automatic 3-Colored Plain Striper.

SOME CRANE FEATURES

Improved Spring Needle Underwear Machine for Shirts, Drawers, Jersey Cloth, Astrachan and Stockinet.

Frames of any guage and diameter required can be furnished from 2½ to 36".

Patent removable hardened Wing Burr Wheels.

Patent Thread Stop Motion can be fitted to 20" and 40" frames and are specially adapted for making fine Jersey Cloth and Stockinet.

Our flat machine is adapted for knitting collarettes.

NYE & TREDICK CO.

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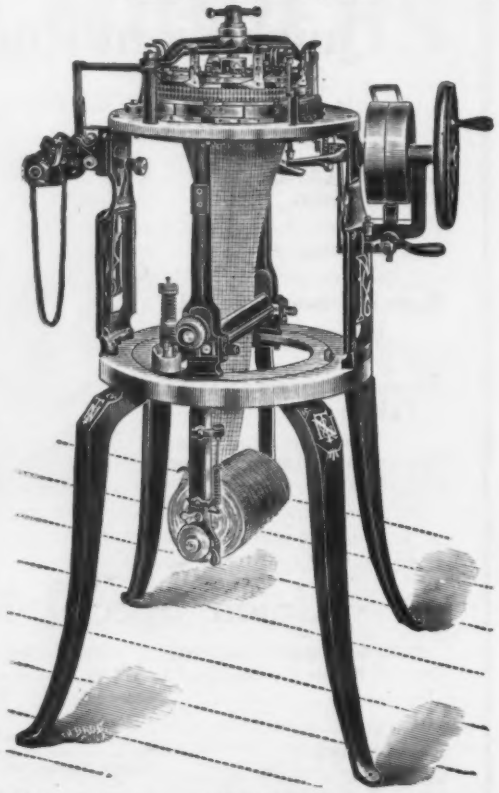


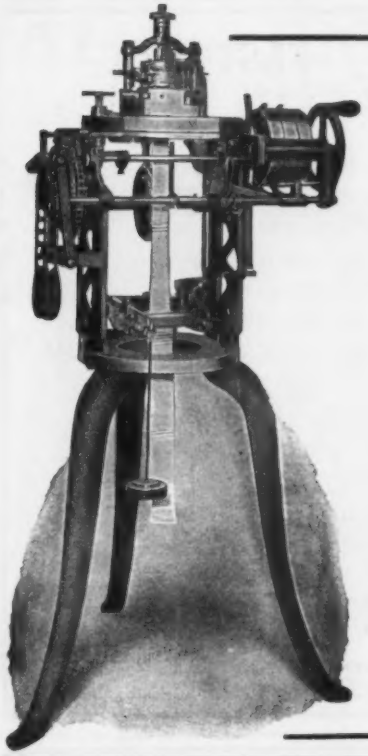
Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

Quality of Fabrics and Production
UNEXCELLED

NYE & TREDICK CO.



H. BRINTON COMPANY

213-217 Race Street, Philadelphia, Pa.

BUILDERS OF

Circular Knitting Machinery

of every kind for every purpose

HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

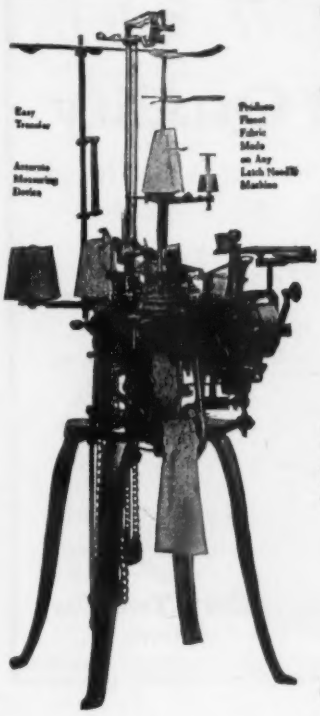
Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

NECKTIE MACHINES

for making all kinds of tubular knitted scarfs.
Write for catalog, prices and samples.



What Knitters are Saying About the "P.& O." Machine

"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P. & O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

Write for full particulars

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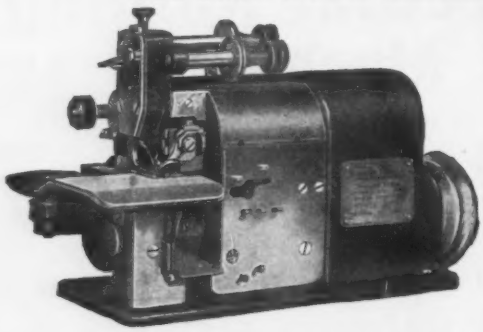
FAST
DURABLE
Light Running

High Speed Overseaming, Overedging and Shell Stitch Machines are



OUR CLASS 60 MACHINES for Trimming and Overseaming in one Operation produce the strongest, best Seams and do it with the greatest economy.

USE STYLE 18 for Horse Blankets.
STYLE 17 B or 22 for Bed Blankets.
STYLE 35 E SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. **HARTFORD, CONN.**

Knickerbocker Building, Sixth and Arch Sts., Phila. 467 Broadway, cor. Grand St., N. Y.
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Imported Knitting Machines of Quality

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FULL FASHIONED MACHINES. "System Cotton" for plain and ribbed Hosiery, Underwear, Gloves and Neckties.

RIB MACHINES, high speed, for Rib Tops, Neckties, Hosiery in plain, striped and accordion effects.

WARP MACHINES **(150 COURSES PER MINUTE)** for Tricot Fabrics.

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WARP MACHINES, for Elastic Hat Bands, Mourning Bands, Shawls and Scarfs.

JACQUARD WARP MACHINES, for Veilings, Laces, Shawls, Insertions, etc.

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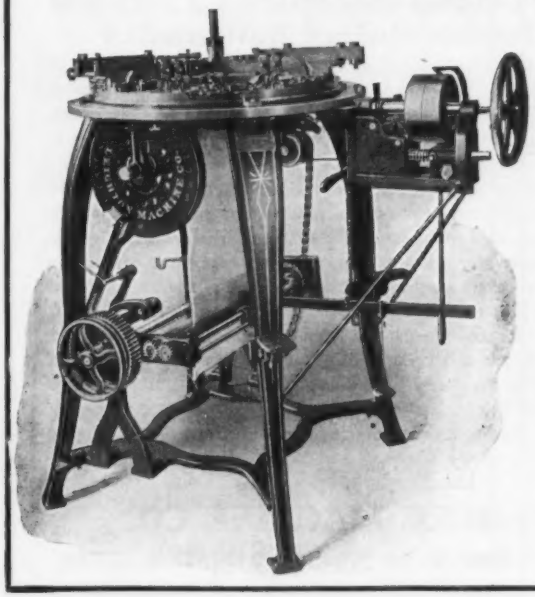
Sole Representative in U. S. and Canada

THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

Means Excellent Stitches with ECONOMICAL OPERATION

For Particulars ask

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N. W. Cor.
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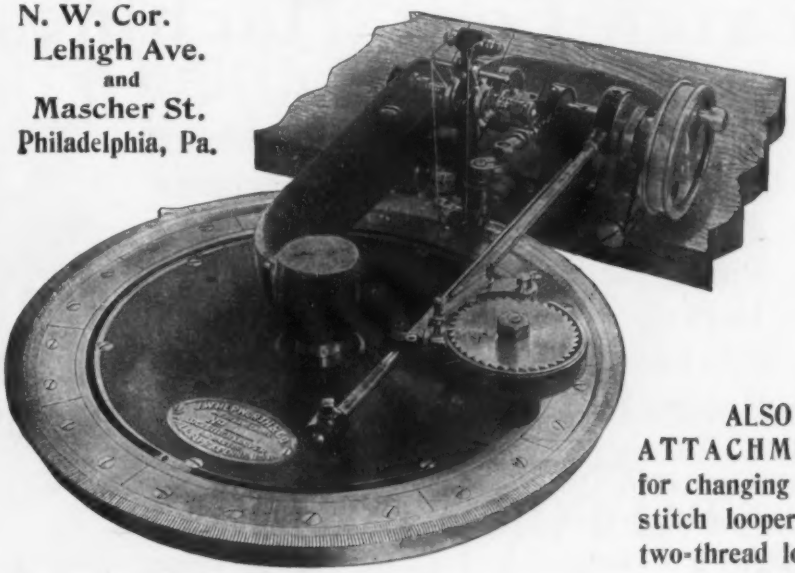
Mascher St.
Philadelphia, Pa.



Makers of Two Thread Elastic Lock Stitch Loopers

ALSO
ATTACHMENTS
for changing our single stitch loopers into the two-thread loopers.

The Reece Button-Hole Machine

For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

THE REECE BUTTON-HOLE MACHINE CO.

Office and Factory - 500 to 514 Harrison Avenue, Boston, Mass

THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
Plain Sweater Coat Machines.
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FOR INFORMATION, ADDRESS

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"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Acme Knitting Machine & Needle Company

FRANKLIN, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers Like our Latch Needles

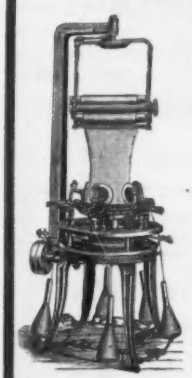
because we make a superior grade of needles

Philadelphia Office, Bourse Bldg.

CHARLES COOPER,

BENNINGTON, VERMONT,

MANUFACTURER OF



Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder, **Spring Needle Cylinder Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders.

Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.

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American Representative:
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"Jenckes Model E"

BALL BEARING

Full Automatic Knitter

Revolving Needle Cylinder

Six Yarn Fingers

Plating

High Spliced Heel

Double Sole

Machine only 18 inches wide

Fabric Take-up

Transferring of ribbed tops without dropped stitches

Jenckes Quality Fabric

Jenckes Knitting Machine Co.

Main Office and Factory

PAWTUCKET, R. I.

Philadelphia Office, 1211-1217 Filbert St.

Also builders of "THE INVINCIBLE"

THE LAMB

LEADER OF KNITTERS

ORIGINAL AND STILL THE BEST

Most widely used; being operated in every civilized country.

Our Collarette Knitter Knits almost any conceivable style and with selvage ends.

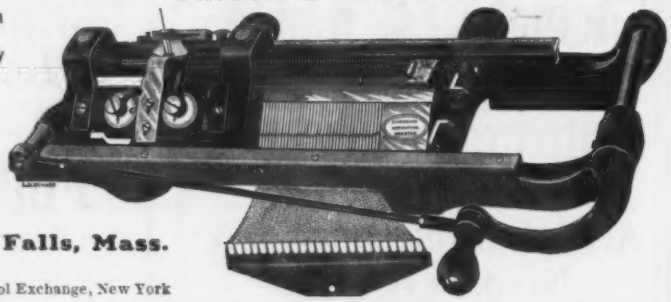
Circular Rib Top and Seaming Machines.

Send for Prices and Catalog.

LAMB
Knitting Machine
COMPANY

P. O. Box 5888, Chicopee Falls, Mass.

J. E. Woodhead, 124 East 22d St., Chicago.
L. D. Sanborn, Room 513, Wool Exchange, New York



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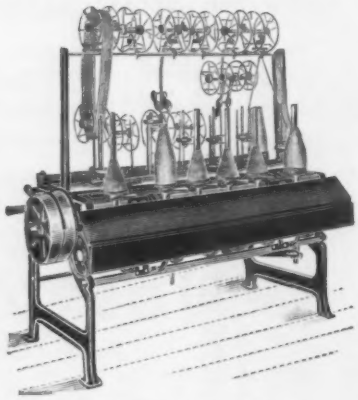
2427 Mascher St., Phila.

WINDERS



6 SPINDLES UP

The best winder on the market. If you are not using one or more try one.

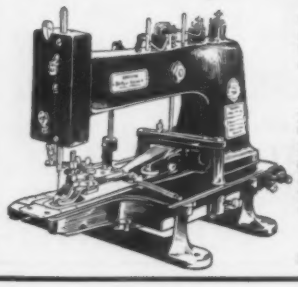
The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
Cor. Elm and Reed Sts., Reading, Pa.

Why Do You Put Buttons on Garments?



"So the garment can be buttoned when on," you would probably reply

Then why sew buttons on in such a way that it is almost impossible to button the garment neatly, especially when starched? Why have the buttons so tight that they will not stand the wear and tear of the laundry? Why sew them without any allowance for thread shrinkage? Why do these things when with the

Elastic Stitch Button Sewing Machine

you can sew buttons neatly and uniformly with only one thread (instead of two), with an allowance for thread shrinkage, and with a raised, hand-sewed effect?

No Threads to trim. Saves 90 percent of Needle Breakage. **No Bobbins to Wind.** **Will Sew all Buttons with any Thread.**

You can save money and increase the demand for your product by sewing your buttons on with the "Elastic Stitch" Button Sewing Machine. *Send for our "List of Users" booklet.*

Union Button Sewing Co., Dept., Frederick Osann Co.

394 Atlantic Ave., Boston, Mass. **Agents Everywhere** 245 Seventh Ave., New York

JAMES TAYLOR, 216 N. Front St. Philadelphia, Pa.

ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY

10 Lamb & Grosser Sweater Machines.
3 Large Crawford Hollow Plate Presses.
1 Allen 40 Spindle Cop Winder.
54 Standard "B" Knitters for sizes.
24 Mayo "Acme" " " "
2 Complete Hosiery Plants.
1 Boomer & Boshert Cold Press.
1 Crane Style Collarette Machine 20", 16 to in.
1 Rotary Fire Pump. 3 Small Pumps.
2 Toque Machines.
4 Hosiery Dryers.
14 Cornely Hosiery Embroidery Machines.
500 Dozen Hosiery Shaping Boards.
1 Caligraph Typewriter.
1 Complete Plant for Mfg. Hosiery
1 ½ h. p. Electric Motor.
1 Singer Nat. Button-hole Machine.
500 Payne Winder Bobbins.
100 ¾ Aut. Knitters, various makes and sizes.
1 Payne 40 Spindle Skein Winder.
1 Abel 36 Spindle Cop Winder.
1 Union Special Overedge, Style 15.400.
4 Climax High Speed Motions for Ribbers.
1 Underwear Mangle.
Lot Electric Stop Motions for flat Machines.
1 Merrow No. 60.
1 Crawford 17 Plate Press.
1 Blickensderfer Typewriter
5 Band Folding and Cutting Machines.
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30 Sweater Coat Machines various styles.
8 Jones Fleecers, 24x36".
1 Underwear Knitting Plant.
2 Singeing Machines.
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4 Hosiery Lever Presses.
42 Union Spec. Sewing Machines, various styles.
50 Loopers and Seamers, all makes.
60 Ribbed Underwear Machines.
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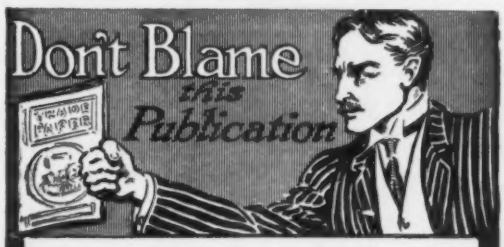
We are always in the market to buy good Second-Hand Knitting and Finishing Machinery.



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Every Manufacturer who wants his advertising efficient and economic should have a copy

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DO YOU WANT?

About $10,000,000.00 worth of full fashioned stockings are made in America each year.

No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

If you are thinking of making full fashioned goods take up the question with us—as our success depends upon yours, we will prove to you that we can help you before you spend a cent.

TEXTILE MACHINE WORKS

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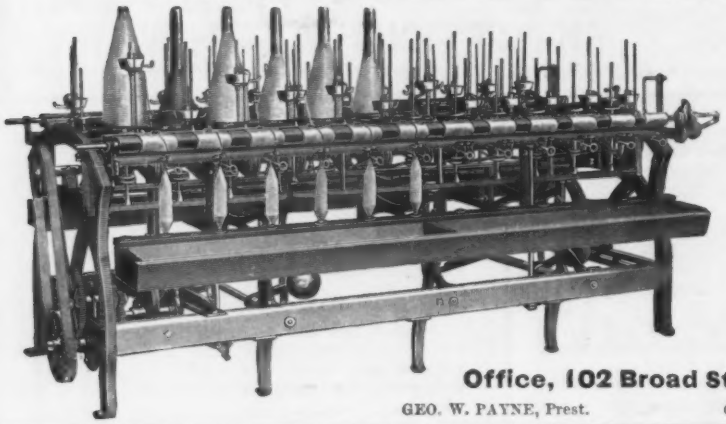
THE MAKERS OF AMERICAN FULL FASHIONED HOSIERY MACHINES

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



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Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides. Bolsters and Stops Made and Repaired at Short Notice.

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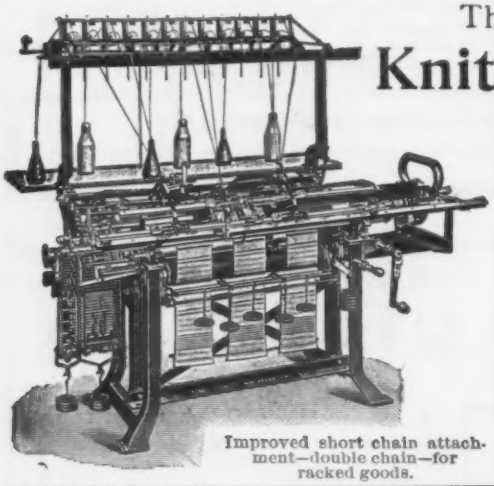
GEO. W. PAYNE, Prest. CLINTON F. PAYNE, Sec'y and Treas



Improved short chain attachment—double chain—for racked goods.

That is the Brand of the

Knitting Machines

worldwide known to be **The Best**

160,000 Knitting Machines in use all over the Universe

CLAES & FLENTJE

Muhlhausen Thr., Germany

(Largest Knitting Machine Factory in the World)

The cut represents one of our full automatic machines with double chain, short chain attachment, doing away with the long chain and lots of blocks.

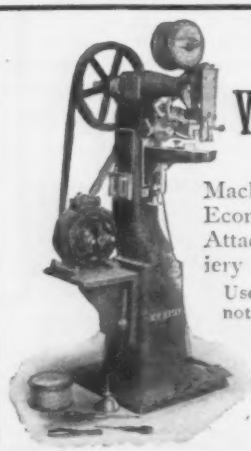
Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

For full particulars, needles and supplies for all kinds of knitting machines, write to

Ainslie Knitting Machine Co.

281 Ainslie Street **Brooklyn, N. Y.**



New Jersey Wire Stitcher

Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

Send for Catalogue

J. L. Shoemaker & Co.
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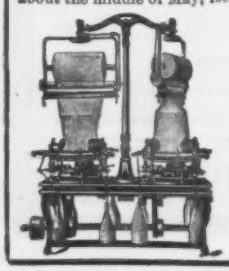
PHILADELPHIA

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.

"Acme" Hosiery and Textile Binder, No. 30

A Simple, Inexpensive Machine, for **Attaching Tickets** on **Hosiery, Underwear,** etc.

It uses a pointed staple, **CANNOT INJURE THE FINEST SILK HOSE**; can be set aside when not in use.

Is operated by foot power and has a **patented WORK-HOLDING DEVICE carrying one dozen or more pairs of hose, keeping them in perfect alignment and presenting the tops in position to receive the tickets AT LEAST TWENTY-FIVE PER CENT QUICKER** than by any other method now in use.

For particulars and the address of the nearest agency

Apply to the Manufacturers

THE ACME STAPLE COMPANY
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The "1912" Cloth Cutting Folding and Winding Machine.

This machine will cut down operating expenses. It does in one operation the work which is now being done in two. It cuts the cloth, folds the edges and rolls them up in one operation, and at all times gets one more strip out of a bolt of cloth than is possible with the old method of cutting. At the same time it measures the bolt of cloth to show the manufacturer whether or not he is getting the number of yards he is paying for. With the high price of cotton to-day every knit goods manufacturer ought to look into this to see if he is getting the maximum efficiency at the least expense. You will find when you come to figure it up in the course of a year that the labor it saves is a big item.

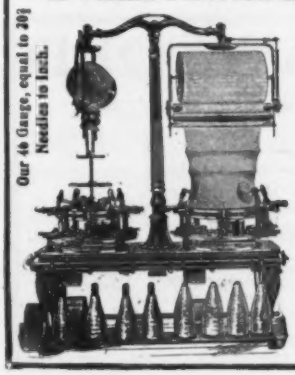
Also have other labor-saving devices, and upon application you can get prices and full information on same.

Joseph A. Firsching, 614 Broad Street Utica, N. Y., U. S. A.

We are the Oldest Manufacturers

WITH

45 YEARS PRACTICAL EXPERIENCE



in building Spring Needle Knitting Machines. Have succeeded knitting the finest and the coarsest work ever made on Spring Needle Knitting Machines in this country, any work from 3 to 46 gauge. Our Machine is of the highest class.

Robt. W. Gormly and Company,
Troy, N. Y.

STANDARD "G"

¶ A New Type of Hosiery Machine—being the result of 22 years of actual experience in studying the needs of the trade.

¶ Your investigation desired.

¶ Can be seen running at all times.

Standard Machine Company

OFFICE AND SHOWROOMS
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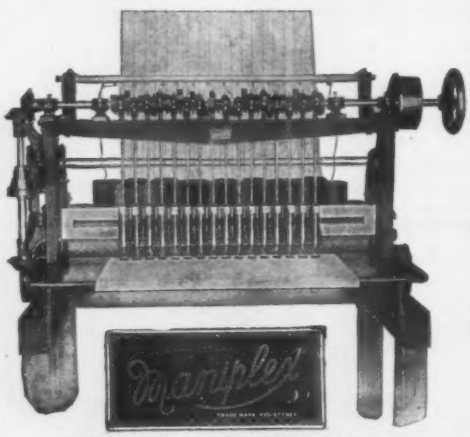
CONTINENTAL LATCH NEEDLE CO.
NEW YORK
THE WORKMANSHIP AND QUALITY OF OUR GERMAN NEEDLES ARE UNSURPASSED OUR SCREW RIVET DOES NOT GET ROUGH OR LOOSE
LARGE STOCK OF NEEDLES FOR ALL AMERICAN AND FOREIGN KNITTING MACHINES
N.Y. OFFICE 120 LIBERTY ST.
WORKS, EBINGEN, GERMANY

"Maniplex" Sewing Machines



For Multiple Stitching

Built for all purposes where a number of rows of stitching are required. ¶With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶Furnished with any required number of needles, spacing to suit requirements. ¶We also build Paper Slitting Machines and design special machinery.

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Walpole, Mass., U. S. A.

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RAG PRESS BOARDS

Especially Adapted to Hot Pressing

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Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards of all Grades for Fancy Weaving. Accurately Cut to Any Size.

The CRAWFORD

HOLLOW STEAM PLATE PRESS

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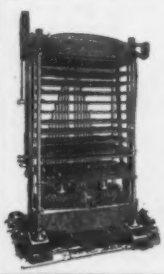

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JOHN C. EGLY, MGR. Manufacturers of
Patent and Regular Latch Needles
Needles for all makes of Knitters and Ribbers
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.
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MANUFACTURERS OF
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AND BURR BLADES OF ALL KINDS
AMSTERDAM, N. Y.

L. T. IVES CO.
ESTABLISHED 1874
Manufacturers of all kinds of
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EXCELSIOR NEEDLES
The Best
Hosiery Needles in the market
Manufactured by
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Excelsior Needle Co.
Largest Manufacturers of Machine Needles in the World
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STANDARD LATCH NEEDLES

Longer Wear Better Work
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LATEST IMPROVED UPRIGHT KNITTING LOOMS
For Millinery, Dress and Upholstery Trimmings and Netting
Steaming outfits for the finishing of knitted neckwear, etc.

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***The* Willcox & Gibbs "OVERLOCK" Machine**
for the High Standard of SEAMING *in one operation,* also for OVEREDGING, and HEMMING of **KNIT UNDERWEAR** and **HOSIERY,** when ECONOMY and EXCELLENCE of finish are carefully studied.

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3,000 Perfect Stitches Per Minute where factory conditions permit.

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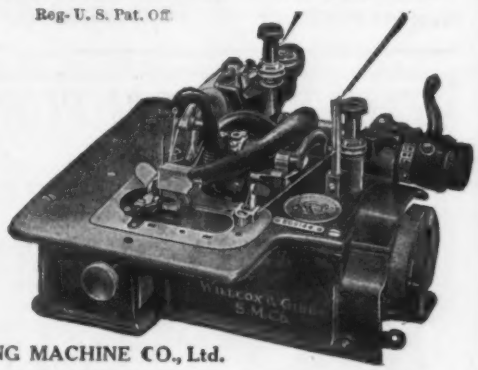

WILLCOX & GIBBS SEWING MACHINE CO.
Chief Office,
658 BROADWAY, New York, N. Y.
WILLCOX & GIBBS SEWING MACHINE CO., Ltd.
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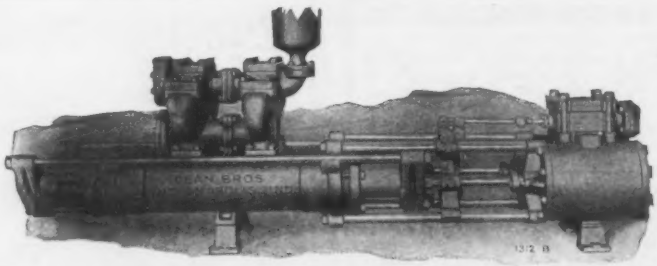

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TWENTY-NINTH SEASON

Oldest in America
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Cotton, Wool, Worsted and Silk

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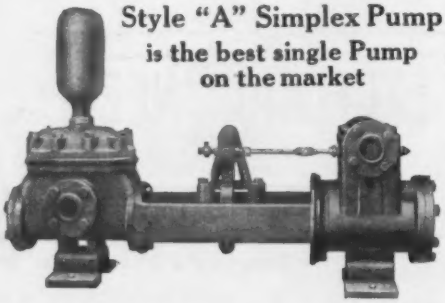
The Blake-Knowles Style "A" Simplex Pump is the best single Pump on the market



It is simple. Occupies minimum space. Has few working parts. Makes long stroke. Stroke is always full length. Economical in steam consumption. Built for hard work.

A full line of sizes for Boiler Feeding, Heavy Pressure and Tank Service.

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The Blake & Knowles Steam Pump Works

115 Broadway, New York. Works: E. Cambridge, Mass.

Branch Offices in all Principal Cities.

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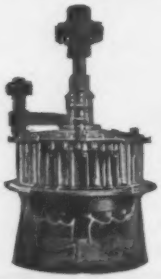
THE SAMSON TURBINE WATER WHEEL

AND WHY IT IS BEST IN

POWER, SPEED AND ECONOMY



The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

Send for catalog illustrating and describing the different types and proving their merit

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SMITH & FURBUSH MACHINE CO.

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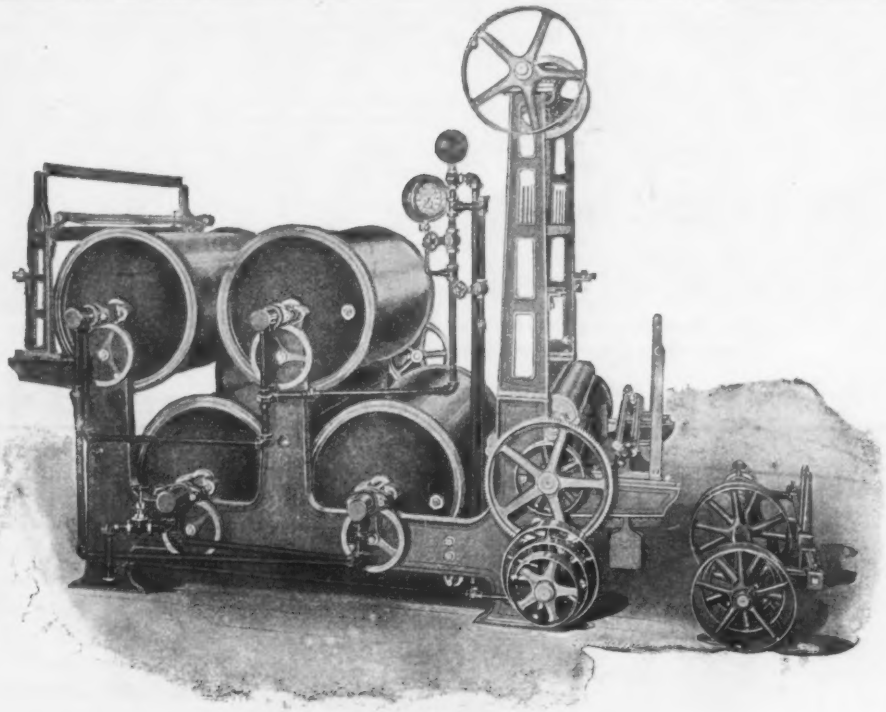
WARP DRESSER Circular No. 34 A



IMPROVED WARP DRESSER

Greatest Capacity of any Warp Dresser Made

Four copper cylinders, with improved stuffing boxes, fed by steam so that the first cylinder is the coolest and each following cylinder hotter than the preceding one.

Carrier rolls, with copper blades to prevent sizing from sticking to rolls. Anti-Friction Roller Bearings for cylinders.

We build a Complete Line of Warping Machinery

SMITH & FURBUSH MACHINE CO.,

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Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES—For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self-feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

METALLIC BREASTS—Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS—Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

MULES—Heavy and Durable for Wool and Waste Yarn.

TWISTERS—Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

WARPING MACHINERY—Copper Cylinder Warp Dressers with single and double size pans; Beamers; Section and Pinless Warp Mills, Creels and Dresser Spoolers for Wool or Worsted.

GRINDERS, Etc.—Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers; also Turning Rests, Fillet Winders, Card Stretchers and Cleaning Frames.

A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging; also for Manufacturing Mop Yarn and Rope from Cotton Waste.

Felting Machinery for Manufacturing Soft Felts or Commercial Batts, for Mattresses, Comforts, etc., made from Cotton Waste, Linters, Jute, Wool and Wool Waste.

Special Circulars furnished for each Machine.

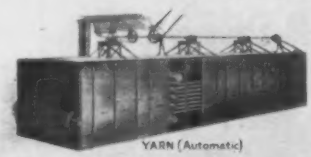
PROCTOR DRYERS

Formerly the "CYCLONE"
Fireproof

STOCKING

COTTON AND WOOL STOCK

TRUCK YARN


YARN (Automatic)

KNIT GOODS

Proctor Dryers of various types are being successfully used on all kinds of goods, handling the material at a very small cost per pound.

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Philadelphia, Pennsylvania

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IN these skyscrapers, where floor space is valuable and where the value of human efficiency is realized, maximum lighting efficiency is a recognized necessity. Both human efficiency and lighting efficiency are even more important in your factory because they have such a tremendous effect on your output and consequently on profits. The highest efficiency of workmen is impossible in a poorly lighted mill.

You can no longer afford to get along with poor or mediocre lighting especially when the most efficient lighting is also the most economical. To get this maximum lighting efficiency you must use the most efficient lamps.

EDISON MAZDA Lamps give more light and better light for less money than any other type of incandescent lamp. The smaller sizes are from three to four times as efficient as carbon filament lamps while the big powerful units are actually 5 to 6 times as efficient as the old style lamps. The largest unit, the 1000 watt lamp, gives nearly 2000 candlepower.

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Every EDISON MAZDA Lamp you buy sums up 35 years' experience in the manufacture of 500,000,000 lamps and the world-wide research of MAZDA Service.

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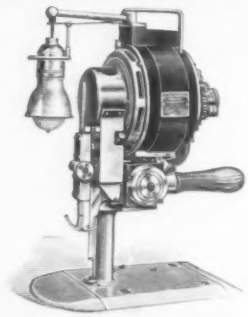

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